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Rising Supply Price

By Joan Robinson

It may seem strange at this time of day to reopen the old familiar subject of diminishing returns and rising supply price. My purpose is frankly escapist, and what follows has no relevance to any problem of importance in the real world.

Confusion in the discussion of the law of diminishing returns has mainly arisen from a failure to make clear what question is being discussed. When that has been decided the rest of the argument follows without difficulty. The classical analysis, which gave rise to the Ricardian theory of rent, dealt with the question of what happens when the supplies of labour and capital increase, and land remains fixed. This clearly has nothing to do with rising supply price for a particular commodity.[1] It belongs to the department of output as a whole. Then there is diminishing returns as it appears in the theory of employment. This is essentially a short-period problem—what happens to the prices of commodities in general when effective demand increases, organisation and capital resources being given, and the amount of employment being free to increase. This also belongs to the analysis of output as a whole.

The problem of the long-period supply curve of a particular commodity belongs to the department of the theory of value, which treats of relative prices of commodities. Marshall's analysis appears to be a cross between the theory of value and the theory of output as a whole. For he seems most often to be discussing the problem of the change in the supply of a particular commodity which occurs in response to a *net* increase in demand. The demand for one commodity increases, but the demand for the rest does not decline. The additional factors, apart from land, employed in increasing the supply of the commodity are called into existence by the increase in demand. "While the supplies of all other agents of production respond in various degrees and various ways to the demand for their services, land makes no such response. Thus an exceptional rise in the earnings of any class of labour, tends to increase its numbers, or efficiency, or both . . . And the same is true as regards capital."[1]

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[1] Cf. Sraffa, "The Laws of Returns under Competitive Conditions," *Economic Journal*, December, 1926.

"The building an additional floor on one factory or putting an extra plough on one farm does not generally take a floor from another factory or a plough from another farm; the nation adds a floor or a plough to its business as the individual does to his. There is thus a larger national dividend which is to be shared out. . . . In contrast to this the stock of land (in an old country) at any time is the stock for *all* time; and when a manufacturer decides to take in a little more land to his business, he decides in effect to take it away from someone else's business."[2]

Marshall's supply curve therefore relates to rather a queer problem. The demand for one commodity, say boots, is increased, the demand for all others remaining the same, so that there is an increase in total expenditure, devoted entirely to boots. The problem is too artificial to be interesting. But supposing we do want to discuss the problem, it is putting the cart before the horse to look at it in this way. Full employment of resources is always assumed, therefore a net increase in demand presupposes an increase in resources. And we cannot begin to discuss whether there will be diminishing returns or not until we know what factors of production have increased in supply.

The problem which belongs properly to the theory of value is the problem of how supply reacts to a transfer of demand. And when we are considering a transfer of demand, say, to boots from commodities in general, it is not at all obvious that Marshall's distinction between land and other factors has any relevance. Factors are released by the decline in demand for things in general, which are available to be employed in making boots, and land will be released as well as labour, capital and entrepreneurship.

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[1] *Principles* (7th ed.), p. 534.

[2] *Ibid.*, pp. 535–6.

Professor Hicks comes nearer to discussing the proper problem.[1] But he also presents it in a peculiar form. There is an increase in the demand for commodity *X* at the expense of commodity *Y*. The price of *X*, according to Professor Hicks, must rise. But to this there is an obvious objection. Before we know what happens to the price of *X* we must know what factors are released from the industry producing *Y*.[2] Professor Hicks merely relies upon the assumption of perfect competition.[3] Under perfect competition, it is true, marginal cost to the firm must be rising. But this is nothing to do with the case. We are discussing the supply of a particular commodity in long-period equilibrium, and it is both unnatural to assume that the number of firms producing that commodity is fixed, and unfair not to inform the reader that that assumption has been made. Further, we must notice that Professor Hicks's view that a rise in the general level of prices must accompany the rise in price of *X* is the result of an optical illusion, due to the fact that *Y* has been chosen as the *numéraire*. In a later passage *Y* is imperceptibly transmuted into money, and the increase in demand for *X* comes about through dis-hoarding.[4] The problem has thus become the issue of a cross between the theory of value and the theory of employment, comparable to that produced by Marshall's cross between the theory of value and the classical theory of output as a whole.

Let us now turn to the problem of a transfer of demand to one commodity, from commodities in general. We will assume (1) full employment, (2) perfect competition, (3) no economies of large-scale industry. The discussion is confined to conditions of full long-period equilibrium. In assuming perfect competition we have already begged the question of the definition of a commodity, for universal perfect competition is possible only in a world in which all consumption goods can be divided into groups (each group being called a commodity) such that within each group there is perfect substitutability, from the consumer's point of view, between any unit of the commodity and any other, while between commodities substitutability is less than perfect. Each group must be large enough to cover the output of a great number of firms. If the world were such that perfect competition were possible, it would be such that the demarcation of commodities would present no difficulty.

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[1] *Value and Capital*, p. 73.

[2] Production has not yet been introduced at this stage of Professor Hicks's argument, but in later chapters its conclusions are taken to be valid for a system with production.

[3] *Value and Capital*, p. 83.

[4] *Ibid.*, p. 108.

At the first stage of our argument we will further assume fixed supplies of all factors. In the real world the demarcation of factors is just as teasing a problem as the demarcation of commodities. My own attempt to provide a "corrected natural unit" for the measurement of factors[1] was a mere aberration, and no genuine solution is possible which treats non-homogeneous factors as though they were homogeneous. But since we are assuming perfect competition we may as well be hung for a sheep as a lamb, and assume that productive resources, as well as consumers' goods, exist in nature in groups (each group being called a factor) such that within each group the elasticity of substitution between units is infinite, while between factors it is finite or zero. By assuming no economies of large scale we have postulated that factors are divisible into units which are small relative to the supply of each factor.

Now to tackle our problem: the demand for a certain commodity, say alpha, increases while the demand for other commodities is reduced, the reduction in demand for any one commodity other than alpha being very small in relation to the increase in demand for alpha. Factors of production are transferred from industry in general to the alpha industry. If alpha employs factors in the same proportions as factors are released, the increase in output of alpha is produced under constant returns, and there is no change in relative prices.

But industries are idiosyncratic, and it is natural to suppose that alpha requires factors, not in the proportions in which they are employed in the average of all industries, but in proportions peculiar to itself. A relative increase in demand for alpha therefore entails an increase in the total demand for those factors which it employs in more than the average proportions and a decline in demand for those factors it employs in less than the average proportions. The relative prices of factors therefore alter.

We are then confronted with the question: in what terms are we to measure the resources employed in alpha?

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[1] *Economics of Imperfect Competition*, p. 332.

We cannot say whether or not the supply price of alpha rises with an increase in its output until we know how prices are to be reckoned.[1] The obvious solution is to measure prices in terms of a composite unit of resources, the factors being weighted by the proportions in which they are found in industry as a whole. So long as we are assuming a fixed supply of each factor this measurement is quite unambiguous.

Now, the factors which alpha requires, or requires most, have risen in price in terms of the composite unit, while the factors which it does not require, or requires least, have fallen in price. Thus the supply price of alpha rises in terms of the composite unit, while the supply price of all other commodities falls, each a little.[2] Thus, for any commodity considered separately there is rising supply price, because an increase in the output of any commodity turns the relative factor prices against itself.[3]

The strength of the tendency to rising supply price will depend upon three considerations.

(1) The larger the proportion of all factors absorbed by alpha, the greater will be the effect upon relative factor prices of a given proportionate increase in the output of alpha. This expresses the familiar proposition that a widely defined industry is more likely to show rising supply price than a narrow one—there is more likely to be rising supply price for the products of engineering in general than for drawing-pins, and for agricultural produce than for Brussels sprouts.

(2) The more idiosyncratic alpha is in respect to the factors which it requires, the further will it be from employing factors in the average proportions, and the more will it raise the price of the factors which it requires in terms of the composite unit. This also is familiar; indeed, the whole theory of diminishing returns in particular industries has developed round the case of the industry employing a rare factor, such as special soil, a particular mineral, or an unusual human skill. In such a case the industry employs the whole of a factor which is not used in other industries at all, so that its selection of factors is very far from the average.

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[1] Cf. Pigou, "Laws of Diminishing and Increasing Cost," *Economic Journal*, June, 1927.

[2] Cf. Robbins, "Certain Aspects of the Theory of Costs," *Economic Journal*, March, 1934, p. 5, note.

[3] It is curious to observe that it is not necessary that there should be any change in the proportions in which factors are employed in alpha. It might happen that all the factors employed in alpha rose equally in terms of the composite unit, so that their prices relative to each other were unchanged. Thus rising supply price might occur without any appearance of diminishing returns in the ordinary sense.

(3) The more obstinately alpha adheres to a special selection of factors, that is, the more rigid the technical conditions, and the lower the elasticity of substitution between the factors which it employs, and between those other factors which it might employ, the greater will be the change in relative factor prices when alpha expands. For if the elasticity of substitution is high alpha will alter its employment of factors in the direction of the average employment of all factors, in response to a rise in the relative price of the factors it happened to be employing in the first position, and the change in relative factor prices will thus be kept in check.

A markedly unaverage selection of factors and a low elasticity of substitution between factors are necessary conditions for an appreciable degree of rising supply price. Even a very large industry will show a small rise in supply price if its selection of factors is near the average, or if it is nearly indifferent as to what factors it employs. On the other hand, a very small industry may enjoy sharply rising supply price if it has very specialised requirements.

Let us now remove the assumption that the supply of each factor is fixed. Within the conditions of the problem total primary resources—for instance the population—must be assumed constant, but the supply of any particular factor—for instance a special type of skill—may be assumed to vary in response to its price. On this assumption, when alpha expands and all other industries contract there is an increase in the supply of the factors which alpha employs in more than the average proportions, and a contraction in supply of factors which it does not employ, or employs in less than the average proportions. Our unit of measurement is no longer unambiguous, since the proportions of factors in industry as a whole are now altered. We may measure price either in terms of the composite unit appropriate to the first position, or in terms of the composite unit after the change has taken place. In either terms, the prices of the factors employed by alpha rise by less than they would have done if all supplies of factors were fixed. The change alters the composite unit in such a way as to bring it closer to the proportions of factors employed in the alpha industry ; the rise in the price of the alpha factors is therefore less in terms of the new unit than of the old.

We must now add a fourth to the influences governing rising supply price. The tendency to rising supply price will be stronger the less elastic the total supplies of those factors required by the expanding industry.

When a change in the total supplies of factors is admitted, it is no longer a universal rule that each industry (unless it employs factors in the average proportions) is working in conditions of rising supply price. Falling supply price may also occur, quite apart from economies of large scale industry. To take the extreme case—suppose that all the factors which alpha employs in more than the average proportions are in perfectly elastic supply, while others, which it employs, but employs in less than the average proportions, are in perfectly inelastic supply. Then an expansion in alpha leads to a fall in the price of the bundle of factors which it employs, in whichever composite unit the price is measured.[1] In less extreme cases there may be a fall in terms of the new composite unit when there is a rise in terms of the original composite unit. This type of falling supply price, due solely to changes in relative factor prices, is Professor Pigou's case of "decreasing supply price *simpliciter*" which is not "decreasing supply price from the standpoint of the community".[2] Where falling supply price occurs, it will work more strongly the larger is the industry; for, the bigger the industry, the greater the effect of a given proportionate increase in its output in altering the supplies of factors favourably to its own requirements.

On the above analysis it is possible to support Marshall's contention that rising supply price is more likely to be found in agriculture and mining than in manufacturing industry. The primary industries are highly idiosyncratic in the factors which they require, elasticity of substitution is often zero between certain factors which they employ and any possible alternative, and the total supply of their factors is highly inelastic. Marshall's distinction between the natural factors, which give rise to diminishing returns, and man-made factors, which do not, can therefore be justified. The logical distinction is not between natural and man-made factors, but between rare and common factors, between cranky and adaptable factors, and between factors in less or more elastic supply. But when the distinctions are drawn on this basis the natural factors are clearly more likely to qualify, in respect of rarity, crankiness and inelastic supply, than human factors. For the general run of manufactured commodities, on the other hand, in the perfectly competitive world postulated by our assumptions, almost constant supply price would be the general rule.

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[1] If each factor is in perfectly elastic supply constant returns must always prevail, for relative factor prices cannot alter. The departure from constant supply price, in either direction, will be greater (other things equal) the greater the difference between the elasticities of supply of those factors which the expanding industry uses in more than the average proportions and of those factors which it employs in less than the average proportions.

[2] *Economics of Welfare*, 3rd ed., p. 224. Professor Hicks must surely be in error in supposing that the "stability conditions" cannot survive the faintest appearance of falling supply price, *Value and Capital*, p. 83. If he had provided himself with stability conditions of tougher morale he would not have been so appalled by the problem of monopoly.

The question which we have chosen to discuss is of very limited interest. No actual change in demand comes about in the form of an increase in demand for one commodity accompanied by a small reduction in demand at the margin for each other commodity. In reality the same causes which produce an increase in taste for one thing will reduce the taste for some particular other things. Thus even granted the extreme assumptions of perfect competition and full equilibrium, the question which we have been discussing is an unnatural one. When the increase in demand for alpha comes about at the expense, not of things in general, but of other particular commodities, say beta and gamma, we must know what factors are employed by beta and gamma before we can say what happens to the supply price of alpha. And we must know how the changes in price of beta and gamma react on the demands for delta and omega. The analysis can be extended to any degree of refinement, but the more complicated the question the more cumbersome the analysis. In order to know anything it is necessary to know everything, but in order to talk about anything it is necessary to neglect a great deal.

The Counter-Revolution of Science

By F. A. v. HAYEK

> *The age preferred the reign of intellect to the reign of liberty.*—Lord Acton.

I. THE SOURCE OF THE SCIENTISTIC HUBRIS: L'ECOLE POLYTECHNIQUE

1

NEVER will man penetrate deeper into error than when he is continuing on a road which has led him to great success. And never can pride in the achievements of the natural sciences and confidence in the omnipotence of their methods have been more justified than at the turn of the eighteenth and nineteenth centuries, and nowhere more so than at Paris where almost all the great scientists of the age congregated. If it is true, therefore, that the new attitude of man towards social affairs in the nineteenth century is due to the new mental habits acquired in the intellectual and material conquest of nature, we should expect it to appear where modern science celebrated its greatest triumphs. In this we shall not be disappointed. Both the two great intellectual forces which in the course of the nineteenth century transformed social thought—modern socialism and that species of modern positivism, which we prefer to call scientism, spring directly from this body of professional scientists and engineers which grew up in Paris, and more particularly from the new institution which embodied the new spirit as no other, the *Ecole polytechnique*.

It is well known that French Enlightenment was characterised by a general enthusiasm for the natural sciences as never yet known before. Voltaire is the father of that cult of Newton which later was to be carried to ridiculous heights by Saint-Simon. And the new passion soon began to bear great fruits. At first the interest concentrated on the subjects connected with Newton's great name. In Clairault and d'Alembert, with Euler the greatest mathematicians of the century, Newton soon found worthy successors who in turn were followed by Lagrange and Laplace, likewise giants.

And with Lavoisier, not only the founder of modern chemistry but also a great physiologist, and, to a lesser degree, with Buffon in biological science, France began to take the lead in all important fields of natural knowledge.

The great *Encyclopædia* was a gigantic attempt to unify and popularise the achievements of the new science, and d'Alembert's "Discours préliminaire" (1754) to the great work, in which he attempted to trace the rise, progress and affinities of the various sciences, may be regarded as the Introduction not only to the work but to a whole period. This great mathematician and physicist did much to prepare the way for the revolution in mechanics by which towards the end of the century his pupil Lagrange finally freed it from all metaphysical concepts and restated the whole subject without any reference to ultimate causes or hidden forces, merely describing the laws by which the effects were connected.[1] No other single step in any science expresses more clearly the tendency of the scientific movement of the age or had greater influence or symbolic significance.[2]

Yet while this step was still gradually preparing in the field where it was to take its most conspicuous form, the general tendency which it expressed was already recognised and described by d'Alembert's contemporary Turgot. In the amazing and masterly discourses which the latter as a young man of 23 delivered at the opening and the closing of the session of the Sorbonne in 1750, and in the sketch of a *Discourse on Universal History* of the same period, he outlined how the advance of our knowledge of nature was accompanied throughout by a gradual emancipation from those anthropomorphic concepts which first led man to interpret natural phenomena after his own image as animated by a mind like his own. This idea, which was later to become the leading theme of positivism and was ultimately misapplied to the science of man himself, was soon afterwards widely popularised by President C. de Brosses under the name of fetishism,[1] the name under which it remained known till it was much later replaced by the expressions anthropomorphism and animism. But Turgot went even further and, completely anticipating Comte in this point, described how this process of emancipation passed through three stages where, after supposing that natural phenomena were produced by intelligent beings, invisible and resembling ourselves, they began to be explained by abstract expressions such as essences and faculties, till at last " by observing reciprocal mechanical action of bodies hypotheses were formed which could be developed by mathematics and verified by experience."[2]

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[1] D'Alembert was fully aware of the significance of the tendency he was supporting and anticipated later positivism to the extent of expressly condemning everything that did not aim at the development of *positive* truths and even suggesting that " all occupations with purely speculative subjects should be excluded from a healthy state as profitless pursuits ". Yet he did not include in this the moral sciences and even, with his master Locke, regarded them as *a priori* sciences comparable with mathematics and of equal certainty with it. See on all this G. Misch, "Zur Entstehung des französischen Positivismus," *Archiv für Philosophie, Abt. I, Archiv für Geschichte der Philosophie*, vol. 14 (1901), especially pp. 7, 31 and 158 ; M. Schinz, *Geschichte der französischen Philosophie seit der Revolution*, I.Bd. *Die Anfänge des französischen Positivismus*, Strassburg, 1914, pp. 58, 67–69, 71, 96, 149 ; and H. Gouhier, *La jeunesse d'Auguste Comte et la formation du positivisme*, Vol. II, Paris, 1936, Introduction.

[2] Cf. E. Mach, *Die Mechanik in ihrer Entwicklung*, 3rd edition, 1897, p. 449.

It has often been pointed out[3] that most of the leading ideas of French Positivism had already been formulated by d'Alembert and Turgot and their friends and pupils Lagrange and Condorcet. For most of what is valid and valuable in that doctrine this is unquestionably true, although their positivism differed from that of Hume by a strong tinge of French rationalism. And, as there will be no opportunity to go into this aspect more fully, it should perhaps be specially stressed at this stage that throughout the development of French positivism this rationalist element, probably due to the influence of Descartes, continued to play an important role.[4]

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[1] In his famous work *Du culte des dieux fétishes* (1760).

[2] *Œuvres de Turgot*, ed. Daire, Paris, 1844, Vol. II, p. 656. Compare also *ibid.*, p. 601.

[3] See particularly the detailed analysis by Misch and the books by Schinz and Gouhier quoted on the previous page, and also M. Uta, *La théorie du savoir dans la philosophie d'Auguste Comte*, Paris (Alcan), 1928.

[4] To avoid giving a wrong impression it should perhaps also be stressed at this point that the Liberalism of the French Revolution was of course not yet based on the understanding of the market mechanism provided by Adam Smith and the Utilitarians but rather on the Law of Nature and the rationalistic-pragmatic interpretation of social phenomena which is essentially pre-Smithian and of which Rousseau's social contract is the prototype. One might indeed trace much of the contrast, which with Saint-Simon and Comte became an open opposition to classical economics, back to the differences which existed, say, between Montesquieu and Hume. Quesnay and Smith, or Condorcet and Bentham. Those French economists who like Condillac or J. B. Say followed essentially the same trend as Smith never had an influence on French political thought comparable to that of Smith in England. The result of this was that the transition from the older rationalist views of society, which regarded it as a conscious creation of man, to the newer view which wanted to re-create it on scientific principles, took place in France without passing through a stage in which the working of the spontaneous forces of society was generally understood. The revolutionary cult of Reason was symptomatic of the general acceptance of the pragmatic conception of social institutions—the very opposite of that of Smith. And in a sense it would be as true to say that it was the same veneration of Reason as the universal creator which led to the triumphs of science that led to the new attitude to social problems as it is to say that it was the influence of the new habits of thought created by the triumphs of science and technology. If socialism is not a direct child of the French Revolution, it springs at least from that rationalism which distinguished most of the French political thinkers of the period from the contemporary English liberalism of Hume and Smith and (to a lesser degree) Bentham and the philosophical Radicals.

It must be pointed out however that these great French thinkers of the eighteenth century showed scarcely any trace yet of that illegitimate extension to the phenomena of society of scientistic methods of thought which later became so characteristic of that School—excepting perhaps certain ideas of Turgot about the philosophy of history and still more so some of Condorcet's last suggestions. But none of them had any doubt about the legitimacy of the abstract and theoretical method in the study of social phenomena and they were all staunch individualists. It is particularly interesting to observe that Turgot, and the same is true of David Hume, was at the same time one of the founders of positivism and of abstract economic theory, against which positivism was later to be employed. But in some respects most of these men unwittingly started trains of thought which produced views on social matters very different from their own.

This is particularly true of Condorcet. Mathematician like d'Alembert and Lagrange, he definitely turned to the theory as well as to the practice of politics. And although to the last he understood that " meditation alone may lead us to general truths in the science of man ",[1] he was not merely anxious to supplement this by extensive observation but occasionally expressed himself as if the method of the natural sciences were the only legitimate one in the treatment of the problems of society. It was particularly his desire to apply his beloved mathematics, especially the newly developed calculus of probability, to his second sphere of interest, which led him to stress more and more the study of those social phenomena which would be objectively observed and measured.[2] As early as 1783, in the oration at his reception into the *Académie*, he gave expression to what was to become a favourite idea of positivist sociology, that of an observer to whom physical and social phenomena would appear in the same light, because, " a stranger to our race, he would study human society as we study those of the beavers and bees ".[3] And although he admits that this is an unattainable ideal because " the observer is himself a part of human society ", he repeatedly exhorts the scholars " to introduce into the moral sciences the philosophy and the method of the natural sciences ".[1]

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[1] See his *Esquisse d'un tableau historique des progrès de l'esprit humain* (1793), ed. O. H. Prior, Paris, 1933, p. 11.

[2] Cf. his *Tableau général de la science qui a pour objet l'application du calcul aux sciences politiques et morales*, *Œuvres*, ed. Arago, Paris, 1847–49, Vol. I, pp. 539–573.

[3] *Œuvres*, ed. Arago, Vol. I, p. 392.

The most seminal of his suggestions however occurs in his *Sketch of a Historical Picture of the Progress of the Human Mind*, the famous Testament of the Eighteenth Century as it has been called, in which the unbounded optimism of the age found its last and greatest expression. Tracing human progress in a great outline through all history, he conceives of a science which might foresee the future progress of the human race, accelerate and direct it.[2] But to establish laws which will enable us to predict the future, history must cease to be a history of individuals and must become a history of the masses, must at the same time cease to be a record of individual facts but must become based on systematic observation.[3] Why should the attempt to base on the results of the history of the human race a picture of its future destiny be regarded as chimerical? " The only foundation for the knowledge of the natural sciences is the idea that the general laws, known or unknown, which regulate the phenomena of the Universe, are necessary and constant; and why should that principle be less true for the intellectual and moral faculties of man than for the other actions of nature? "[4] The idea of natural laws of historical development and the collectivist view of history were born, merely as bold suggestions, it is true, but to remain with us in a continuous tradition to the present day.[5]

2

Condorcet himself became a victim of the Revolution. But his work guided to a large extent that same Revolution, particularly its educational reforms, and it was only as a result of these that towards the beginning of the new century the great institutionalised organisation of science arose which saw not only one of the most glorious periods of scientific advance but also the birth of that scientism which is more particularly our concern. As is so often the case with similar movements, it was only in the second or third generation that the mischief was done by the pupils of the great men exaggerating and misapplying the ideas of their masters beyond their proper limits.

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[1] Condorcet, *Rapport et projet de décret sur l'organisation générale de l'instruction publique* (1792), ed. G. Compayre, Paris, 1883, p. 120.

[2] *Esquisse*, ed. Prior, p. 11.

[3] *Ibid.*, p. 200.

[4] *Ibid.*, p. 203. The reader need hardly be reminded that the famous passage in which this sentence occurs figures, characteristically, as motto in front of book VI, " On the Logic of the Moral Sciences " of J. S. Mill's *Logic*.

[5] It is worthy of mention that the man who was so largely responsible for the creation of what in the late 19th century came to be regarded as " historical sense ", i.e., of the *Entwicklungsgedanke* with all its metaphysical associations, was the same man who was capable of celebrating in a discourse the deliberate destruction of papers relating to the history of the noble families of France. " To-day Reason burns the innumerable volumes which attest the vanity of a caste. Other vestiges remain in public and private libraries. They must be involved in a common destruction."

In three respects the direct consequences of the Revolution are of special interest to us. In the first place the very collapse of the existing institutions called for immediate application of all the knowledge which appeared as the concrete manifestation of that Reason which was the Goddess of the Revolution. As one of the new scientific journals which sprang up at the end of the Terror expressed it: "The Revolution has razed everything to the ground. Government, morals, habits, everything has to be rebuilt. What a magnificent site for the architects! What a grand opportunity of making use of all the fine and excellent ideas that had remained speculative, of employing so many materials that could not be used before, of rejecting so many others that had been obstructions for centuries and which one had been forced to use."[1]

The second consequence of the Revolution which we must briefly consider is the complete destruction of the old and the creation of an entirely new scholastic system which had profound effects on the outlook and general views of the whole next generation. The third is more particularly the foundation of the *Ecole Polytechnique*.

The Revolution had swept away the old educational system of *collèges* and *universités* based largely on classical education, and after some short-lived experiments replaced them in 1795 by the new *écoles centrales* which became the sole centres of secondary education.[2] In conformity with the ruling spirit and by an over-violent reaction against the older schools, the teaching in the new institutions was for some years almost entirely confined to the scientific subjects. Not only the ancient languages were reduced to a minimum and in practice almost entirely neglected, even the instruction in literature, grammar, and history was very inferior and moral and religious instruction, of

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Quoted by Gouhier, *La jeunesse d'Auguste Comte*, Vol. II, p. 31, from the *Décade philosophique*, Vol. I, 1794.

[2] See E. Allain, *L'œuvre scolaire de la Révolution, 1789–1802*, Paris, 1891; C. Hippeau, *L'instruction publique en France pendant la Révolution*, Paris, 1883 and F. Picavet, *Les Idéologues*, Paris, 1891, pp. 56–61.

course, completely absent.[1] Although after some years a new reform endeavoured to make good some of the gravest deficiencies,[2] the interruption of the instruction in those subjects for a series of years was sufficient to change the whole intellectual atmosphere. Saint-Simon described this change in 1812 or 1813: "Such is the difference in this respect between the state of . . . even thirty years ago and that of to-day that while in those not distant days, if one wanted to know whether a person had received a distinguished education, one asked: 'Does he know his Greek and Latin authors well?', to-day one asks: 'Is he good at mathematics? Is he familiar with the achievements of physics, of chemistry, of natural history, in short, of the positive sciences and those of observation?'"[3]

Thus a whole generation grew up to whom that great storehouse of social wisdom, the only form indeed in which an understanding of the social processes achieved by the greatest minds is transmitted, the great literature of all ages, was a closed book. For the first time in history that new type appeared which as the product of the German *Realschule* and of similar institutions was to become so important and influential a figure in the later nineteenth and the twentieth century: the technical specialist who was regarded as educated because he had passed through difficult schools but who had little or no knowledge about society, its life, growth and problems and its values, which only the study of history, literature and languages can give.

3

Not only in secondary education but still more so in higher education the Revolutionary Convention had created a new type of institution which was to become permanently established and a model imitated by the whole world, the *Ecole Polytechnique*. The wars of the Revolution and the help which some of the scientists had been able to render in the production of essential supplies[4] had led to a new appreciation of the need of trained engineers, in the first instance for military purposes. But industrial advance also created a new interest in machines. Scientific and technological progress created a widespread enthusiasm for technological studies, which expressed itself in the foundation of such societies as the *Société philotechnique* and the *Société polytechnique*.[1] Higher technical education had till then been confined to specialised schools such as the *Ecole des Ponts et Chaussées* or the various military schools. It was at one of the latter that G. Monge, the founder of descriptive geometry, Minister of Marine during the Revolution and later friend of Napoleon, taught. He sponsored the idea of a single great school in which all classes of engineers should receive their training in the subjects they had in common.[2] He communicated that idea to Lazare Carnot, the " organiser of victory ", an old pupil of Monge and himself no mean physicist and engineer.[3] These two men impressed their stamp on the new institution which was created in 1794. The new *Ecole Polytechnique* was (against the advice of Laplace[4]) to be devoted mainly to the applied sciences—in contrast to the *Ecole Normale*, created at the same time and devoted to theory—and remained so during the first ten or twenty years of its existence. The whole teaching centred, to a much higher degree than is still true of similar institutions, around Monge's subject, descriptive geometry, or the art of blue-print making, as we may call it without injustice to show its special significance for engineers.[5] First organised on essentially civilian lines, the

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[1] See E. Allain, *op. cit.* pp. 117–120.

[2] After 1803 the ancient languages were at least partly restored in Napoleon's *lycées*.

[3] H. de Saint-Simon, *Mémoire sur la science de l'homme* (1813) in *Œuvres de Saint-Simon and d'Enfantin*, Paris, 1877–78, Vol. XL, p. 16.

[4] Particularly of saltpetre for the production of gunpowder.

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[1] See Gouhier, *La jeunesse d'Auguste Comte*, Vol. II, p. 54.

[2] On the foundation and history of the Ecole Polytechnique see A. Fourcy, *Histoire de l'Ecole Polytechnique*, Paris, 1828; G. Pinet, *Histoire de l'Ecole Polytechnique*, Paris, 1887; G.-G. J. Jacobi, Ueber die Pariser polytechnische Schule (Vortrag gehalten am 22. Mai 1835 in der physikalisch-ökonomischen Gesellschaft zu Königsberg) in *Gesammelte Werke*, Berlin, 1891, Vol. VI, p. 355; and F. Schnabel, *Die Anfänge des technischen Hochschulwesens*, Stuttgart, 1925.

[3] Carnot had published in 1783 an *Essay on Machines in General* (in the second edition of 1803 called *Principes fondamentaux de l'équilibre du mouvement*) in which he not only expounded Lagrange's new view of mechanics but developed the idea of the " ideal machine " which takes nothing away from the force which puts it into motion. His work did much to prepare the way for that of his son, Sadi Carnot, " the founder of the Science of Energy ". His younger son, Hippolyte, was the leading member of the Saint-Simonian group and actual writer of the *Doctrine de Saint-Simon* which we shall meet later. Lazare Carnot, the father, had been a life-long admirer and protector of Saint-Simon himself. As Arago reports of Lazare Carnot, he " always discoursed with [Arago] on the political organisation of society precisely as he speaks in his work of a machine ". See F. Arago, *Biographies of Distinguished Men*, transl. by W. H. Smith, etc., London, 1857, pp. 300–304, and E. Dühring, *Kritische Geschichte der allgemeinen Principien der Mechanik*, 3rd ed., Leipzig, 1887, pp. 258–261.

[4] L. de Launay, *Un grand français, Monge, Fondateur de l'Ecole Polytechnique*, Paris, 1933, p. 130.

[5] Cf. A. Comte, " Philosophical considerations on the Sciences and Men of Science " (1825, in *Early Essays on Social Philosophy*, London, " New Universal Library," p. 272), where he says that he knows " but one conception capable of giving a precise idea of [the characteristic doctrines fitted to constitute the special existence of the class of Engineers], that of the illustrious Monge, in his *Géometrie descriptive*, where he gives a general theory of the arts of construction ".

School was later given a purely military organisation by Napoleon who also, however much he favoured it otherwise, persistently resisted any attempt to liberalise its curriculum and had even the permission to provide a course in so harmless a subject as literature wrung from him only with some difficulty.[1]

Yet in spite of the limitations as to the subjects taught, and the even more serious limitation on the previous education of the students in its early years, the *Ecole* commanded from the very beginning a teaching staff probably more illustrious than any other institution in Europe has had before or since. Lagrange was among its first professors, and although Laplace was not a regular teacher there, he was connected with the school in many ways, including the office of chairman of its council. Monge, Fourier, Prony, and Poinsot were among the first generation of teachers of mathematical and physical subjects ; Berthellot, who continued the work of Lavoisier, and several others hardly less distinguished,[2] taught chemistry. The second generation which began to take over early in the new century included such names as Poisson, Ampère, Gay-Lussac, Thénard, Arago, Cauchy, Fresnel, Malus, to mention only the best known, incidentally nearly all ex-students of the *Ecole*. The institution had only existed for a few years when it had become famous all over Europe, and the first interval of peace in 1801–2 brought Volta, Count Rumford and Alexander von Humbold on pilgrimage to the new temple of science.

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This is not the place to speak at length of the conquest of nature associated with these names. We are only concerned with the general spirit of exuberance which they engendered, with the feeling which they created that there were no limits to the powers of the human mind and to the extent to which man could hope to harness and control all the forces which so far had threatened and intimidated him. Nothing perhaps expresses more clearly this spirit than Laplace's bold idea of a world formula which he expressed in a famous passage of his *Essai philosophique sur les Probabilités* : " A mind that in a given instance knew all the forces by which nature is animated and the position of all the bodies of which it is composed, if it were vast enough to include all these data within his analysis, could embrace in one single formula the movements of the largest bodies of the Universe and of the smallest atoms; nothing would be uncertain for him; the future and the past would be equally before his eyes."[1] This idea, which exercised so profound a fascination[2] on generations of scientistically-minded people is, as is now becoming apparent, not only a conception which describes an unattainable ideal, but in fact a quite illegitimate deduction from the principles by which we establish laws for particular physical events. It has been shown by modern logical analysis to be itself a piece of "metaphysical speculation".[3]

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[1] G.-G. J. Jacobi, *l.c.*, p. 370.

[2] Fourcroy, Vauquelin, Chaptal.

It has been well described how the whole of the teaching at the *Ecole Polytechnique* was penetrated with the positivist spirit of Lagrange and all the courses and the textbooks used were modelled on his example.[4] Perhaps even more important, however, for the general outlook of the polytechnicians was the definite practical bent inherent in all the teaching, the fact that all the sciences were taught mainly in their practical applications and that all the pupils looked forward to using their knowledge as military or civil engineers. The very type of the engineer with his characteristic outlook, ambitions, and limitations was here created. That synthetic spirit which would not recognise sense in anything that had not been deliberately constructed, that love of organisation that springs from the twin sources of military and engineering practices,[5] the æsthetic predilection for everything that had been consciously constructed over anything that had "jest growed", was a strong new element which was added to—and in the course of time even began to replace—the revolutionary ardour of the young polytechnicians. The peculiar characteristics of this new type who, as it has been said, " prided themselves on having more precise and more satisfactory solutions than anyone else for all political, religious and social questions ",[1] and who " ventured to create a religion as one learns at the *Ecole* to build a bridge or a road "[2] was early noticed, and their propensity to become socialists has often been pointed out.[3] Here we must confine ourselves to mentioning that it was in this atmosphere that Saint-Simon conceived some of the earliest and most fantastic plans for the reorganisation of society, and that it was at the *Ecole Polytechnique* where, during the first twenty years of its existence, Auguste Comte, Prosper Enfantin, Victor Considérant and some hundreds of later Saint-Simonians and Fourierists received their training, followed by a succession of social reformers throughout the century down to Georges Sorel.[4]

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[1] Laplace, *Essai philosophique sur les probabilités* (1814), edition *Les Maîtres de la Pensée Scientifique*, Paris, 1921, p. 3.

[2] Cf. for instance the reference to it in Abel Transon, *De la religion Saint-Simonienne. Aux Elèves de l'Ecole Polytechnique*, Paris, 1830, p. 27. See also below, p. 28, footnote 1.

[3] On the postulate of universal determinism which is really involved, see particularly K. Popper, *Logik der Forschung*, 1935, p. 183, Ph. Frank, *Das Kausalgesetz*, and R. von Mises, *Probability, Statistics and Truth*, 1939, pp. 284–294.—Equally characteristic of the positivist spirit and no less influential in spreading it is the famous anecdote about Laplace's answer to Napoleon when asked why in his *Mécanique Céleste* the name of God did not appear: "Je n'ai pas besoin de cette hypothèse".

[4] E. Dühring, *Kritische Geschichte*, etc., 3rd ed., p. 569, *et seq.*

[5] H. de Balzac after remarking in one of his novels (*Autre étude de femme*) how different periods had enriched the French language by certain characteristic words, takes *organiser* as an example and adds that it is "un mot de l'empire qui contient Napoléon tout entier".

But, whatever the tendencies among the pupils of the institution, it must again be pointed out that the great scientists who built the fame of the *Ecole Polytechnique* were not guilty of illegitimate extensions of their technique and habits of thought to fields which were not their own. They little concerned themselves with problems of man and society.[5] This was the province of another group of men, in their time no less influential and admired, but whose efforts to continue the eighteenth century traditions in the social sciences were in the end to be swamped by the tide of scientism and silenced by political persecution. It was the misfortune of the *idéologues*, as they called themselves, that their very name should be perverted into a catchword describing the very opposite from what they stood for, and that their ideas should fall into the hands of the young engineers who distorted and changed them beyond recognition.

5

It is a curious fact that the French scholars of the time of which we are speaking should have been divided into two " distinct societies which had only one single trait in common, the celebrity of their names ".[1] The first were the professors and examiners at the *Ecole Polytechnique* and the *Collège de France* which we already know. The second was the group of physiologists, biologists and psychologists, mostly connected with the *Ecole de Médecine* and known as the Ideologues.

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[1] É. Keller, *Le général de la Moricière*, quoted by Pinet, *Histoire de l'Ecole Polytechnique*, Paris, 1887, p. 136.

[2] A. Thibaudet, quoted by Gouhier, *La jeunesse d'Auguste Comte*, Vol. I, p. 146.

[3] See Arago, *Œuvres*, Vol. III, p. 109, and F. Bastiat, *Baccalauréat et Socialisme*, Paris, 1850.

[4] See G. Pinet, *Ecrivains et Penseurs Polytechniciens*, Paris, 1898.

[5] See, however, the essays of Lavoisier and Lagrange in Daire, *Mélanges d'économie politique*, 2 vols., Paris, 1847–8, Vol. I, pp. 575–607.

Not all of the great biologists of which France could boast at the time belonged to this second group. At the *Collège de France*, Cuvier, the founder of comparative anatomy and probably the most famous of them, stood close to the pure scientists. The advances of the biological sciences as expounded by him contributed perhaps as much as anything else to create the belief in the omnipotence of the methods of pure science. More and more problems that had seemed to evade the powers of exact treatment were shown to be conquerable by the same methods.[2] Other biologists, who at least since have become equally famous, Lamarck and St. Hilaire, remained at the periphery of the ideologist group and did not concern themselves much with the study of man as a thinking being. But Cabanis and Main de Biran, with their friends Destutt de Tracy and Degérando, made the latter the central problem of their labours.

Ideology,[3] in the sense in which the term was used by that group, meant simply the analysis of human ideas and of human action, including the relation between man's physical and mental constitution.[4] The expression was indeed used in very much the same wide sense as their German contemporaries used the term anthropology.[5] The inspiration of the French group came mainly from Condillac and the field of their studies was outlined by Cabanis, one of the founders of physiological psychology, in his *Rapports du physique et du moral de l'homme* (1802). And although there was much talk among them about applying the methods of natural science to man, this meant no more than that they proposed to study man without prejudices and without nebulous speculations about his end and destiny. But this prevented neither Cabanis nor his friends from devoting a large part of their life work to that analysis of human ideas which gave ideology its name. Nor did it occur to them to doubt the legitimacy of introspection. If the second head of the group, Destutt de Tracy, proposed to regard the whole of ideology as part of zoology,[1] this did not prevent him from confining himself entirely to that part of it which he called *idéologie rationelle*, in contrast to the *idéologie physiologique*, and which consisted of logic, grammar and economics.[2]

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[1] See Arago, *Œuvres*, Vol. II, p. 34, where he points out that Ampère (a physiologist by training) was one of the few connecting links between the two groups.

[2] On Cuvier's influence see the account in J. T. Merz, *A History of European Thought in the Nineteenth Century*, Vol. I, 1906, pp. 136 *et seq.*, where the following characteristic passage is quoted (p. 154) from Cuvier's *Rapport historique sur le progrès des sciences naturelles depuis* 1789, Paris, 1810, p. 389: " Experiments alone, experiments that are precise, made with weights, measures and calculation, by comparison of all substances employed and all substances obtained; this to-day is the only legitimate way of reasoning and demonstration. Thus, though the natural sciences escape the application of the calculus, they glory in being subject to the mathematical spirit, and by the wise course they have invariably adopted, they do not expose themselves to the risk of taking a backward step ".

[3] A. C. Thibaudeau (*Bonaparte and the Consulate*, 1834, English translation by G. K. Fortescue, 1908, p. 153) points out that, although the terms ' idéologues ' and ' idéologie ', commonly ascribed to Napoleon, were introduced as technical terms by Destutt de Tracy with the first volume of his *Eléments d'Idéologie*, published in 1801, at least the word 'idéologie' was known in French as early as 1684.

[4] On the whole ideological school see the comprehensive exposition in F. Picavet, *Les Idéologues, Essai sur l'histoire des idées et des théories scientifiques, philosophiques, religieuses, en France depuis 1789*, Paris, 1891.

[5] On the German parallel to the *idéologues* see F. Günther, *Die Wissenschaft vom Menschen, ein Beitrag zum deutschen Geistesleben im Zeitalter des Rationalismus* (in *Geschichtliche Untersuchungen*, herausgegeben von K. Lamprecht, Bd. 5, Heft 1) 1907.

It cannot be denied that in all this, out of their enthusiasm for the pure sciences, they used many misleading expressions which were grossly misunderstood by Saint-Simon and Comte. Cabanis in particular stressed repeatedly that physics must be the basis of the moral sciences[3] ; but with him too this meant no more than that account must be taken of the physiological bases of mental activities, and he always recognised the three separate parts of the "science de l'homme", physiology, analysis of ideas, and morals.[4] But, in so far as the problems of society are concerned, while Cabanis' work remained mainly programmatic in character, Destutt de Tracy made very important contributions. We need here concern ourselves only with one : his analysis of value and its relation to utility, where, proceeding from the foundations laid by Condillac, he went very far in providing what classical English political economy lacked and what might have saved it from the impasse into which it got—a correct theory of value. Destutt de Tracy (and Louis Say, who later continued his work) may indeed be said to have anticipated by more than half a century what was to become one of the most important advances of social theory, the subjective (or marginal utility) theory of value.[1]

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[1] Picavet, *l.c.*, p. 337.

[2] *Ibid.*, p. 314.

[3] *Ibid.*, p. 250. Also see pp. 131–5, where Cabanis' predecessor in these efforts, Volney, is discussed. In 1793, Volney had published a *Catéchisme du Citoyen Français*, later to become *La loi naturelle ou les principes physiques de la morale* in which he unsuccessfully attempted to create morals as a physical science.

[4] *Ibid.*, p. 226.

It is true that others outside their circle went much further in the application of the technique of the natural sciences to social phenomena, particularly the *Société des Observateurs de l'Homme*, which, largely under Cuvier's influence, went some way in confining social study to a mere recording of observations reminiscent of similar organisations of our own day.[2] But on the whole there can be no doubt that the ideologues preserved the best tradition of the eighteenth century *philosophes*. And while their colleagues at the *Ecole Polytechnique* became the admirers and friends of Napoleon and received from him all possible support, the ideologues remained staunch defenders of individual freedom and incurred the wrath of the despot.

6

It was Napoleon who gave currency to the word ideologue in its new sense by using it as a favourite term of contempt for all those who ventured to defend freedom against him.[3] And he did not content himself with abuse. The man who understood better than any of his imitators that " in the long run the sword is always beaten by the spirit " did not hesitate to carry his " repugnance for all discussion and the teaching of political matters"[1] into practice. The economist J. B. Say, a member of the ideologist group and for some years editor of its journal, the *Décade philosophique*, was one of the first to feel the strong hand. When he refused to change a chapter in his *Traité d'économie politique* to suit the wishes of the dictator, the second edition was prohibited and the author removed from the *tribunat*.[2] In 1806 Destutt de Tracy had to appeal to President Jefferson to secure the publication of at least an English translation of his *Commentaire sur l'Esprit des lois* which he was not allowed to publish in his own country.[3] A little earlier (1803) the whole of the second class of the *Académie*, that of the moral and political science, had been suppressed.[4] In consequence, these subjects remained excluded from the great *Tableau de l'état et des progrès des sciences et des arts depuis 1789* which the three classes of the *Académie* had been ordered to furnish in 1802. This was symbolic of the whole position of these subjects under the Empire. The teaching of them was prevented and the whole younger generation grew up in ignorance of the achievements of the past. The door was thus opened to a new start unencumbered by the accumulated results of earlier study. Social problems were to be approached from a new angle. The methods, which since d'Alembert had so successfully been used in physics, whose character had now become explicit, and which more recently had led to similar results in chemistry and biology, were now to be applied to the science of man. With what results we shall gradually see.

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[1] On Destutt de Tracy see H. Michel, *L'Idée d'état*, Paris, 1895, pp. 282–286; on Louis Say see A. Schatz, *L'Individualisme économique et social*, Paris, 1907, pp. 153 *et seq.*

[2] See Picavet, *l.c.*, p. 82.

[3] See the passage from Napoleon's reply to the Council of State at its session of December 20th, 1812, quoted by Pareto (*Mind and Society*, Vol. III, p. 1244) from the *Moniteur universel*, Paris, December 21st, 1812 : " All the misfortunes that our beautiful France has been experiencing have to be ascribed to ' ideology ', to that cloudy metaphysics which goes ingeniously seeking first causes and would ground legislation of the peoples upon them instead of adapting laws to what we know of the human heart and the lessons of history. Such errors could only lead to a régime of men of blood and have in fact done so. Who cajoled the people by thrusting upon it a sovereignty it was unable to exercise ? Who destroyed the sacredness of the laws and respect for the laws by basing them not on the sacred principles of justice, on the nature of things and the nature of civil justice, but simply on the will of an assembly made up of individuals who are strangers to any knowledge of law, whether civil, administrative, political or military ? When a man is called upon to reorganise a state, he must follow principles that are forever in conflict. The advantages and disadvantages of the different systems of legislation have to be sought in history." See also H. Taine, *Les origines de la France contemporaine*, 1876, Vol. II, pp. 214–233. Not because of its questionable historical correctness, but in order to show how all this appeared to the next generation, the following characteristic statement by a leading Saint-Simonian may be quoted : " Après 1793, *l'Académie des Sciences* prend le sceptre ; les *mathématiciens* et *physiciens* remplacent les littérateurs : Monge, Fourcroy, Laplace . . . règnent dans le royaume de l'intelligence. En même temps, Napoléon, membre de l'Institut, classe de *mécanique*, étouffe au berceau les enfants légitimes de la philosophie du XVIII^{e} siècle ". (P. Enfantin, *Colonisation de l'Algérie*, 1843, pp. 521-2.)

II. The "Accoucheur d'Idees": Henri de Saint-Simon

1

Early training and experience can hardly be said to have qualified the count Henri de Saint-Simon for the rôle of a scientific reformer. But it must be admitted that when in 1798, at the age of 38,[5] he took up his abode opposite the *Ecole Polytechnique*, henceforth to interpret to the world the significance of scientific progress for the study of society, he was unquestionably even then a man of rich and varied experience; but scientific study had scarcely been included. The facts of his earlier life, only quite recently brought to light,[1] are considerably less elevating than the numerous anecdotes which he himself and his pupils have transmitted to us and which until lately formed almost our sole information about his youth. The legends tell us that he descended from Charlemagne, that d'Alembert supervised his education, and that his valet had orders to wake the ambitious young man daily with the words: *Levez-vous, Monsieur le Comte, vous avez de grandes choses à faire.* All this is not altogether impossible. It is certain, however, that for the first twenty years of his adult life he lived the life of an adventurer, as many sons of aristocratic families must have done during the period, but on a scale and with an intensity that probably surpassed those of most of his contemporaries.

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[1] See A. C. Thibaudeau, *Le Consulat et l'Empire*, Paris, 1835–37, Vol. III, p. 396.

[2] See J. B. Say, *Traité d'économie politique*, 2nd ed. 1814, Avertissement.

[3] See G. Chinard, *Jefferson et les idéologues*, Baltimore, 1925.

[4] Cf. Merz, *l.c.*, Vol. I, p. 149.

[5] The date, and therefore the age, is not quite certain.

Almost as soon as he obtained a commission in the French Army he followed Lafayette to America and when, after four years, fighting ceased, he bade farewell to his profession. Even before this we find him dreaming of piercing the Isthmus of Panama. A little later he offered his services in Holland for an expedition against the British Indies and was also concerned more concretely with projects of canals in Spain. The Revolution found him back in Paris, as the citoyen Bonhomme, forswearing his title and acting as an extreme Sansculotte. But soon more profitable opportunities offered themselves. In the sale of the church lands we find him as one of the most active intermediaries, speculating with borrowed money on a colossal scale, one of the great profiteers of inflation, who did not scorn any business that came his way, such as an attempted sale of the lead from the roofs of Notre Dame. It is not surprising to find him in prison during the terror. It was during the time he spent there that he says he decided on a career as a philosopher. But, released, he once more preferred financial to metaphysical speculation. So long as the source of funds (a Saxon diplomatist) continued to provide him with sufficient capital, he tried his hand at all sorts of commercial ventures, such as organising a stage coach service, selling wine retail, manufacturing textiles and even "republican" playing cards in which the obnoxious kings and queens were replaced by *le génie* and *la liberté*. His plans were even more ambitious. He seems to have begun the construction of some large industrial plant and he certainly dreamt of a combined commercial and banking enterprise that "should be unique in the world". He also acted as spokesman for French financial interests at the Anglo-French discussions at Lille in 1797.

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[1] See H. Gouhier, *La jeunesse d'Auguste Comte et la formation du positivisme*, Vol. II, *Saint Simon jusqu'à la restauration*, Paris, 1936, which for the first forty-five years of Saint-Simon's life supersedes all earlier biographies, including the best of them, G. Weill, *Un précurseur du socialisme, Saint-Simon et son œuvre*, Paris, 1894, and M. Leroy, *La vie véritable du comte de Saint-Simon, 1760–1825*, Paris, 1925, and G. Dumas, *Psychologie de deux messies positivistes, Saint-Simon et Auguste Comte*, Paris, 1905.

All these activities, however, came to a sudden end when in 1798 his partner returned to Paris and asked to see the accounts. Saint-Simon certainly knew what high living meant, and his house, run by the former *maître d'hôtel* of the Duc de Choiseul, and his kitchen, presided over by an equally reputed *chef*, were famous. But that all the costs of this should have gone down as expenses on the joint account rather upset the good Saxon count. He withdrew his funds, and Saint-Simon, still in possession of a fortune, substantial but no longer adequate to support further grandiose ventures, found it advisable to withdraw from commercial activity and henceforth to seek glory in the intellectual sphere.

We need not doubt that in the mind of the disappointed *faiseur* vague plans for the reorganisation of society were already forming; and it is not surprising that he should soon find that all his experiences had not provided him with the knowledge which would enable him to elaborate these ideas. He therefore decided "to employ his money to acquire scientific knowledge".[1] It was at this time that he spent three years in close contact with the teachers and students of the *Ecole Polytechnique* as a kind of Maecenas-pupil, feasting the professors and assisting the students, one of whom, the great mathematician Poisson, he maintained for years and regarded as his adopted son.

The method of study which Saint-Simon chose for himself was not of the ordinary. Feeling that his brain was no longer elastic enough to pursue a systematic course, he preferred to learn what he could in the more pleasant form of dinner-table conversation. He asked the scholars of whose knowledge he hoped to profit to his house, and appears even to have married for the sole purpose of keeping a house where he could properly entertain the great savants.

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[1] "J'ai employé mon argent à acquérir de la science; grande chère, bon vin, beaucoup d'empressements vis-à-vis des professeurs auxquels ma bourse était ouverte, me procuraient toutes les facilités que je pouvais désirer". Quoted by M. Leroy, *l.c.*, p. 210.

Lagrange, Monge, Berthollet, and, probably after 1801, when he felt he had completed his education in the mechanical sciences and moved to the neighbourhood of the *Ecole de Médecine*, Gall, Cabanis and Bichat are reported to have partaken of his hospitality. Yet this method of study seems to have proved to be of questionable value. At any rate in later life our hero complained to a friend that his " scholars and artists ate much but talked little. After dinner I went to sit down in an easy chair in a corner of the salon and fell asleep. Fortunately Madame de Saint-Simon did the *honneurs* with much grace and *esprit*."[1]

Whether it was merely that he became aware that this had been a bad investment and decided to cut the losses, or whether it was that another marriage appeared to him a more attractive method of instruction, but not only the dinners but also the marriage came to an end soon after he had moved to the new place. He explained to his wife that " the first man of the world ought to be married to the first woman " and that, therefore, with much regret he had to ask her to be released. Was it an accident that the divorce was effected in the month after Madame de Staël had become a widow, the Madame de Staël who, in a book that had fired Saint-Simon's imagination, had only just celebrated the " positive sciences " and emphasised that the " science of politics was yet to be created " ?[2] It is alleged that as soon as he was free he hurried to Le Coppet on the Lake of Geneva and proposed in the following words : " Madame, you are the most extraordinary woman on earth and I am the most extraordinary man ; together we shall undoubtedly produce a still more extraordinary child." Legend adds that he also proposed that they should celebrate their nuptials in a balloon. About the terms in which the refusal was couched the versions vary.

2

The visit to Switzerland was also the occasion of Saint-Simon's first publication. In 1803 there appeared in Geneva the *Lettres d'un habitant de Genève à ses contemporains*,[3] a little tract in which the Voltairean cult of Newton was revived in a fantastically exaggerated form. It begins by proposing that a subscription should be opened before the tomb of Newton to finance the project of a great " Council of Newton " for which each subscriber is to have the right of nominating three mathematicians, three physicists, three chemists, three physiologists, three *littérateurs*, three painters and three musicians.[1] The twenty-one scholars and artists thus elected by the whole of mankind, and presided over by the mathematician who received the largest number of votes,[2] become in their collective capacity the representatives of God on earth,[3] who deprives the Pope, the cardinals, bishops and the priests of their office because they do not understand the divine science which God has entrusted to them and which some day will again turn earth into paradise.[4] In the divisions and sections into which the supreme Council of Newton will divide the world, similar local Councils of Newton will be created which will have to organise worship, research and instruction in and around the temples of Newton which will be built everywhere.[5]

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[1] Léon Halévy, " Souvenirs de Saint-Simon, " *La France littéraire*, March, 1832, partially reproduced by G. Brunet in *Revue d'histoire économique et sociale*, 1925, p. 168.

[2] See Madame de Staël, *De la littérature considérée dans ses rapports avec les institutions sociales* (1800). The passages quoted occur in the " Discours préliminaire," Vol. I, p. 58, and in Vol. II, 2nd part, Ch. VI, p. 215 of the 3rd ed. of 1818.

[3] See *Œuvres de Saint-Simon et d'Enfantin*, Paris, 1865–1878 (henceforth quoted as *O.S.S.E.*), Vol. XV, pp. 7–60, and the new edition reprinted from the original with an Introduction by

Why this new " social organisation ", as Saint-Simon calls it for the first time in an unpublished manuscript of the same period ?[6] Because we are still governed by people who do not understand the general laws that rule the universe. " It is necessary that the physiologists chase from their company the philosophers, moralists and metaphysicians just as the astronomers have chased out the astrologers and the chemists have chased out the alchemists ".[7] The physiologists are competent in the first instance because " we are organised bodies ; and it is by regarding our social relationships as physiological phenomena that I have conceived the project which I present to you."[8]

But the physiologists themselves are not yet quite scientific

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A. Pereire, Paris, 1925. Nearly all the important passages from Saint-Simon's works are conveniently brought together in *L'œuvre d'Henri de Saint-Simon*, Textes choisies avec une Introduction par C. Bouglé, Notice bibliographique de A. Pereire, Paris, 1925. In the references given below, the first refers to the *Œuvres*, the second (in brackets) to the separate edition of the *Lettres* of 1925. For the complicated history of the various editions and manuscripts of this work see Gouhier, *La jeunesse d'Auguste Comte*, Vol. II, pp. 224 *et seq.*

[1] *O.S.S.E.*, XV, p. 11 (3).

[2] *Ibid.*, p. 51 (55).

[3] *Ibid.*, p. 49 (53).

[4] *Ibid.*, p. 48 (52).

[5] *Ibid.*, pp. 50–3 (54–8).

[6] In *Lettres*, ed. A. Pereire, pp. xv, 93.

[7] *O.S.S.E.*, XV, p. 39 (39).

[8] *Ibid.*, p. 40 (40).

enough. They have yet to discover how their science can reach the perfection of astronomy by basing itself on the single law to which God has subjected the universe, the law of universal gravitation.[1] It will be the task of the Council of Newton by exercising its spiritual power to make people understand this law. Its tasks, however, go far beyond that. It will not only have to vindicate the rights of the man of genius, the scientists, the artists and all the people with liberal views[2]; it will also have to reconcile the second class of people, the proprietors, and the third, the people without property, to whom Saint-Simon addresses himself specially as his friends and whom he exhorts to accept this proposal which is the only way to prevent that "struggle which, from the nature of things, necessarily always exists between" the two classes.[3]

All this is revealed to Saint-Simon by the Lord himself, who announces to His prophet that He has placed Newton at His side and entrusted him with the enlightenment of the inhabitants of all planets. The instruction culminates in the famous passage from which much of later Saint-Simonian doctrine springs: "All men will work; they will regard themselves as labourers attached to one workshop whose efforts will be directed to guide human intelligence according to my divine foresight. The supreme Council of Newton will direct their works."[4] Saint-Simon has no qualms about the means that will be employed to enforce the instructions of his central planning body: "Anybody who does not obey the orders will be treated by the others as a quadruped."[1]

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[1] *O.S.S.E*, XV, pp. 39–40, 55 (39, 61). The passage in which Saint-Simon praises the significance of that universal law is a curious anticipation of Laplace's famous world formula (*ibid.*, p. 59 (67)): "Faites la supposition que vous avez acquis connoissance de la manière dont la matière s'est trouvée repartie à une époque quelconque, et que vous avez fait le plan de l'Univers, en désignant par des nombres la quantité de matière qui se trouvoit contenue dans chacune des ces parties, il sera clair à vos yeux qu'en faisant sur ce plan d'application de la loi de la pesanteur universelle, vous pourriez prédire (aussi exactement que l'état des connoissances mathématiques vous le permettroit) tousles changements successifs qui arriveraient dans l'Univers." But although Laplace published his formula only in 1814, we must, no doubt, assume that the idea would have been familiar from his lectures delivered in 1796 to which he later added the introduction containing the famous phrase.

[2] *O.S.S.E.*, XV, p. 26 (23).

[3] *Ibid.*, p. 28 (25).

[4] *Ibid.*, p. 55 (61). Cf. also p. 57 (65): "L'obligation est imposée à chacun de donner constamment à ses forces personelles une direction utîle à l'humanité; les bras du pauvre continueront à nourir le riche, mais le riche reçoit le commandement de faire travailler sa cervelle, et si sa cervelle n'est pas propre au travail, il sera bien obligé de faire travailler ses bras; car Newton ne laissera sûrement pas sur cette planète (une des plus voisines du soleil) des ouvriers volontairement inutiles dans l'atelier." The idea of the organisation of society on the example of the workshop, which appears here for the first time in literature, has, of course, since played an important rôle in all socialist literature. See particularly G. Sorel, "Le syndicalisme révolutionaire" in *Mouvement Socialiste*, November 1st and 15th, 1905. Compare also the passage in K. Marx, *Das Kapital*, Vol. 1, Ch. 12, section 4, 10th ed., pp. 319–324.

In condensing we have had to try and bring some order into the incoherent and rambling jumble of ideas which this first pamphlet of Saint-Simon really is. It is the outpouring of a visionary megalomaniac who sprouts half-digested ideas, who all the time is trying to attract the attention of the world to his unappreciated genius and the necessity to finance his works, and who does not forget to provide for himself as the founder of the new religion great power and the chairmanship of all the Councils for life.[2]

3

Soon after the publication of this first work, Saint-Simon found that his funds were entirely exhausted and the next few years he spent in increasing misery, importuning his old friends and associates with demands for money and, it appears, not stopping short of blackmail. Even his appeals to now powerful friends of the past, such as the Comte de Ségur, Napoleon's *grand maître des cérémonies*, procured him in the end no more than the miserable and humiliating position of copyist in a pawnbroking institution. After six months of this, weakened and ill, he met his former valet, who took him into his house. For four years (1806–1810) until he died that devoted servant provided for all the needs of his ex-master and even defrayed the cost of printing Saint-Simon's next work.

It seems that during this period Saint-Simon read more extensively than ever before; at least the *Introduction aux travaux scientifiques du XIX*^{e} *siècle*[3] shows a wide although still very superficial and ill-digested knowledge of the scientific literature of the period. The main theme is still the same, but the methods proposed have somewhat changed. Before science can organise society, science itself must be organised.[4] The Council of Newton therefore now becomes the editorial committee of a new great Encyclopædia which is to systematise and unify all knowledge: "We must examine and co-ordinate it all from the point of view of Physicism."[1] This physicism is not merely a new general scientific method; it is to be a new religion, even if at first only for the educated classes.[2] It is to be the third great stage in the evolution of religion from Polytheism through "Deism"[3] to Physicism. But although the growth of Physicism has now been going on for eleven hundred years,[4] the victory is not yet complete. The reason is that the work of the past, particularly that of the French Encyclopedists, was merely critical and destructive.[5] It is for the great Emperor Napoleon, "the scientific chief of humanity as he is its political chief," "the most positive man of the age," to organise the scientific system in a new encyclopedia worthy of his name.[6] Under his direction the "physicist clergy" in the *atelier scientifique* will create a work that will organise physicism and found, on reasoning and observation, the principles which for ever will serve as guides to humanity.[7] The greatest man after the Emperor, and that is "undoubtedly the man who admires him most profoundly", offers himself for the task as his "scientific lieutenant, as a second Descartes, under whose leadership the works of the new school will be prodigious."[8]

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[1] *Lettres*, ed. A. Pereire, p. 54. The passage has been discreetly suppressed by his pupils who edited the *Œuvres*.

[2] *O.S.S.E.*, XV, p. 54 (59).

[3] 2 Vols. 1807–8. The *Introduction* has not been included in the *Œuvres de Saint-Simon et d'Enfantin* and must be consulted in *Œuvres choisies de C.-H. de Saint-Simon*, Bruxelles, 1859, Vol. I, pp. 43–264.

[4] *Œuvres choisies*, I ("Mon Portefeuille"): "Trouver une synthèse scientifique qui codifie les dogmes du nouveau pouvoir et serve de base à une réorganisation de l'Europe".

It need hardly be said that this work is no more systematic than the first. After a vain attempt at coherent exposition it soon becomes a collection of disjointed notes from Saint-Simon's *portefeuille*. He himself abandoned the ambitious plan outlined at the beginning, as he explains in the sketch of his autobiography, because of lack of funds, or as he admits elsewhere, because he was not yet ripe for the task.[9] Yet, with all its defects, the work is a remarkable document. It combines, for the first time, nearly all the characteristics of the modern scientistic organiser. The enthusiasm for physicism (they now call it physicalism) and the use of

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[1] *Œuvres choisies*, I, p. 219. See also pp. 195, 214–5, and 223–4.

[2] *Ibid.*, p. 214: "Je crois à la nécessité d'une religion pour le maintien de l'ordre social; je crois que le déisme est usé, je crois que le physicisme n'est point assez solidement établi pour pouvoir servir de base à une religion. Je crois que la force des choses veut qu'il y ait deux doctrines distinctes : le Physicisme pour les gens instruits, et le Déisme pour la classe ignorante".

[3] Saint-Simon uses 'Deism' and 'Theism' indiscriminately for Monotheism.

[4] *Ibid.*, p. 195.

[5] *Ibid.*, p. 146.

[6] *Ibid.*, p. 61.

[7] *Ibid.*, pp. 243–4.

[8] *Ibid.*, pp. 231, 236. Descartes has now become the hero because our perpetual time-server has become violently nationalistic, deplores the English predominance which is still defiling French science and wants to give the initiative to the French. The work pretends to be an answer to Napoleon's question to the *Académie* on the progress of French sciences since 1789.

[9] *O.S.S.E.*, XV, pp. 71, 77.

" physical language ",[1] the attempt to " unify science " and to make it the basis of morals, the contempt for all " theological ", that is anthropomorphic, reasoning,[2] the desire to organise the work of others, particularly by editing a great encyclopedia, and the wish to plan life in general on scientific lines are all present. One could sometimes believe that one is reading a contemporary work of an H. G. Wells, a Lewis Mumford, or an Otto Neurath. Nor is the complaint missing about the intellectual crisis, the moral chaos, which must be overcome by the imposition of a new scientific creed. The book is indeed, more than the *Lettres d'un habitant de Genève*, the first and most important document of that " counter-revolution of science ", as their fellow-reactionary Bonald called the movement,[3] and which later found more open expression in Saint-Simon's avowed desire to " terminate the revolution " by conscious re-organisation of society. It is the beginning of both moderm positivism and modern socialism, which, thus, both began as definitely reactionary and authoritarian movements.

The *Introduction*, addressed to his fellow scientists, was not published but merely printed in a small number of copies for distribution among the members of the *Institut*. But although the great scientists to whom he sent it took no notice, he continued to appeal to them for their assistance in a number of smaller tracts of a similar character. We can pass over the various minor writings of the next few years, which were mainly concerned with the project of an encyclopedia, and during which time to the megalomania of the prophet is gradually added the characteristic persecution mania of the *verkannte Genie* which expressed itself in violent abuse of the formerly so admired Laplace, whom he suspected of being responsible for his neglect.[4]

4

There are no important developments in his writings till 1813. Once more plunged into abject poverty by the death of his faithful valet, he starved and in the end fell dangerously ill. He was rescued by an old acquaintance, a *notaire*, who negotiated a settlement with his family under which, in return for giving up all expectations of future inheritance, he received a small annual pension. Once again settled in tolerable comfort, his work entered a new phase. Finally disillusioned in his hope of obtaining the collaboration of the physicists, he turned away from the *brutiers*, *infinitésimaux*, *algébristes et arithméticiens*,[1] whom he no longer conceded the right to regard themselves as the scientific advance guard of humanity, and taking up the second strand of thought from his first work, he turned again to the biologists.

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[1] *O.S.S.E.*. XV, p. 112.

[2] *Ibid.*, p. 217 : " l'idée de Dieu n'est pas autre chose que l'idée de l'intelligence humaine généralisée ".

[3] See W. Sombart, *Sozialismus und Soziale Bewegung*, 7th ed. 1919, p. 54.

[4] *O.S.S.E.*. XV, pp. 42, 53–56.

In his *Mémoire sur la science de l'homme* (part of which, however, still bears the separate title *Travail sur la gravitation universelle*), his problem is again how physiology, of which the science of man is a part, can be treated by the methods adopted by the physical sciences[2] and thus follow those sciences in the progress from the " conjectural " to the " positive " stage.[3] With the science of man, as part and summit of physiology, morals and politics must also become positive sciences,[4] and thus " the passage from the idea of many particular laws regulating the phenomena of the divers branches of physics to the idea of a single and unique law regulating them all " must become completed.[5] When this is achieved and all the particular sciences have become positive, the general science, i.e. philosophy, will also become positive.[6] It will then at last be able to become the new spiritual power, which must remain separate from the temporal power, since this is a division incapable of improvement.[7] With this organisation of the " positive system " we shall have definitely entered into the third great epoch of human history of which the first, or preliminary, was ended with Socrates while the second or conjectural has lasted to the present.[8]

This development of ideas which we can observe enables us to predict their future movement.[9] Since " the cause which acts strongest on society is a change, a perfectioning of the ideas, the general beliefs,"[10] we can do even more, we can develop a theory of history, a general history of mankind, which will deal not merely with the past and present but also with the future. Such an abridged history of the past, future and present of the human mind Saint-Simon

[1] *O.S.S.E.*, XL, p. 39.
[2] *Ibid.*, p. 17.
[3] *Ibid.*, pp. 25, 186.
[4] *Ibid.*, p. 29.
[5] *Ibid.*, pp. 161, 186.
[6] *Ibid.*, p. 17.
[7] *Ibid.*, pp. 247, 310.
[8] *Ibid.*, p. 265.
[9] *Ibid.*, p. 172.
[10] *Ibid.*, p. 161.

proposed in the programme for the third memoir on the science of man. It is " the happiest idea which has ever presented itself to his mind " and he is " enchanted by the conception ",[1] but for the moment he develops it no further. As with most of his works before 1814, the idea remained a promise of future things to come, a prospectus of work he would like to have done, but the *Mémoire* itself is still an unorganised mass full of irrelevant detail and bizarre conceits from which one can extract the fertile ideas only because one knows their later development.

5

All this changed suddenly with Saint-Simon's next work, the *Réorganisation de la société européenne*,[2] published in 1814. From that date onwards there issued under his name a stream of books and pamphlets in which ideas were systematically expounded and which sometimes were even well written. It is true that after a new period of abject misery during which he underwent a cure in what looks suspiciously like a mental home he was enabled to make a new start. But the man of fifty-five was hardly likely to have suddenly acquired the gift of lucid exposition. It is difficult to resist the belief that the change had something to do with the fact that from that date he was able to secure the help of young collaborators and that the influence of these young men went beyond matters of mere exposition.

The first of these young helpers, who appeared even on the title page of the *Réorganisation* as his co-author and pupil, was the future historian Augustin Thierry, then 19 years of age—the same Thierry who was later to become the leader of the new schools of historians who developed history as a history of the masses and of a struggle of class interests and, in this, profoundly influenced Karl Marx.[3]

The pamphlet on which he first collaborated with Saint-Simon is not of great interest to us, although it has achieved a certain celebrity for its advocacy of an Anglo-French Federation which, after the adherence of Germany, was to develop into a sort of European Federation with a common parliament. The fall of the French Empire and the negotiations going on in Vienna made Saint-Simon then apply his dominant idea of a reorganisation of society to the whole of Europe, but in the execution of the idea there was little of the old Saint-Simon, except for occasional flights of fancy of which the phrase " the golden age that is not behind us but in front of us and that will be realised by the perfection of the social order " has by its later use as a motto by the Saint-Simonians become widely known.[1]

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[1] *O.S.S.E.*, XL, p. 287.

[2] *De la réorganisation de la société européenne ou de la nécessité et des moyens de rassembler les peuples de l'europe en un seul corps politique en conservant à chacun son indépendance nationale*, par H. C. Saint-Simon et A. Thierry, son élève. *O.S.S.E.*, Vol. XV, pp. 153-248, also in a new edition by A. Pereire, Paris, 1925.

[3] For a discussion of the significance of the work of Thierry, Mignet, and Guizot in this connection see G. Plechanow, " Ueber die Anfänge der Lehre vom Klassenkampf," *Die Neue Zeit*, Vol. 21, 1902.

The collaboration of Saint-Simon and Thierry lasted about two years. During the hundred days, they wrote first against Napoleon and then against the Allies. The great Carnot, always one of Saint-Simon's admirers and then temporarily returned to power, procured for Saint-Simon a sub-librarianship at the *Arsenal*, equally temporary.[2] After Waterloo he fell for a brief period back into poverty. But he had now young friends among the new generation of bankers and industrialists whose fortunes were rising, and it was to them that he attached himself. The enthusiasm for industry was henceforth to replace the enthusiasm for science; or, at least, as the old love was not quite forgotten, he found a new force worthy to exercise the temporal power at the side of science which was to wield the spiritual power. And he found that the praise of industry was better rewarded than the appeals to the scientists or the adulation of the Emperor. Lafitte, governor of the Banque de France, was the first to help. He procured for Saint-Simon the considerable sum of 10,000 francs per month, to start a new journal to be called *l'Industrie littéraire et scientifique ligué avec l'industrie commerciale et manufacturière.*

Around the new editor a number of young men collected, and he began his career as the head of a school. At first the group consisted largely of artists, bankers, and industrialists —among them some very distinguished and influential men. There was even a real economist among the contributors to the first volume of *l'Industrie*, St. Aubin, although one whom J. B. Say unkindly described as the "clown of political economy". He and Thierry appeared as the authors of the discussions of Finance and Politics which filled the first volume of *l'Industrie*. To the second volume, which appeared in 1817 under a slightly changed title,[1] Saint-Simon himself contributed some considerations on the relations between France and America.

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[1] *O.S.S.E.*, XV, p. 247. In the form of " L'âge d'or, qu'une aveugle tradition a placé jusq'ici dans le passé, est devant nous " the phrase appears first in 1825 as the motto of Saint-Simon's *Opinions littéraires et philosophiques*, and later as the motto of the Saint-Simonian *Producteur.*

[2] See M. Leroy, *Vie de Saint-Simon*, pp. 262, 277, and Hippolyte Carnot, " Mémoire sur le Saint-Simonism," *Séances et travaux de l'Académie des Sciences Morales et Politiques*, 47ᵉ année, 1887, p. 128, where H. Carnot reports the following characteristic of Saint-Simon by his father : " J'ai connu M. de Saint-Simon ; c'est un singulier homme. Il a tort de se croire un savant, mais personne n'a des idées aussi neuves et aussi hardies ". The only other scholars who seem ever to have given Saint-Simon any encouragement appear to have been the astronomer Hallé and, characteristically, Cuvier.

This essay is on the whole in the spirit of the genuinely liberal group for whom Saint-Simon was then writing.[2] "The sole purpose towards which all our thoughts and all our efforts ought to be directed, the organisation of society most favourable to industry in the widest sense of the term" is still best achieved by a political power which does nothing except to see that "the workers are not disturbed" and which arranges everything in such a way that all workers, whose union forms the true society, are able to exchange directly, and in complete freedom, the products of their various labours.[3] But his attempt to base all politics on economic considerations as he understands them, that is in fact on technological considerations, began soon to lead him outside the views of his liberal friends. We need only quote two of the "most general and most important truths" to which his considerations lead: "1st. The production of useful things is the only reasonable and positive end which politics can set itself and the principle *respect for production and the producers* is infinitely more fruitful than the principle respect for property and the proprietors", and "7th. As the whole of mankind has a common purpose and common interests each man ought to regard himself in his social relations as engaged in a company of workers". "Politics, therefore, to sum up in two words, is the science of production, that is, the science which has for its object the order of things most favourable to all sorts of production".[4] We are back at the ideas of the *Habitant de Genève*—and at the same time at the end of what can be regarded as the independent development of Saint-Simon's thought.

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[1] *L'Industrie ou discussions politiques, morales et philosophiques dans l'intérêt de tous les hommes livrés à des travaux indépendants.* In *O.S.S.E.*, Vol. XVIII.

[2] For a comparison of Saint-Simon's views of this period with those of his liberal contemporaries see E. Halévy, *L'ère des tyrannies*, 1938, pp. 33–41.

[3] *O.S.S.E.*, Vol. XVIII, p. 165.

[4] *Ibid.*, pp. 186, 188, 189. Cf. also Vol. XIX, p. 126.

The beginning defection of liberalism soon cost Saint-Simon his first assistant. " I cannot conceive of association without government of someone " are reported to have been Saint-Simon's words in the final quarrel, to which Thierry replied that he " could not conceive of association without liberty ".[1] Soon this desertion by his assistant was to be followed by a mass flight of his liberal friends. But this came only after a new assistant of great intellectual energy began to push Saint-Simon further along the road which he had only indicated but had not had the power to follow. In the summer of 1817 the young polytechnician Auguste Comte, the first and greatest of the host of engineers who were to recognise Saint-Simon as their master, joined him as secretary. Henceforth, to the death of Saint-Simon eight years later, the intellectual history of the two men is indissolubly fused. As we shall see in the next Part, much of what is commonly regarded as Saint-Simonian doctrine, and what through the Saint-Simonians exercised a profound influence before Comte's public career as a philosopher began, was due to Auguste Comte.

(*To be continued.*)

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[1] See A. Augustin Thierry, *Augustin Thierry* (1795–1856) *d'après sa correspondance et ses papiers de famille*, Paris, 1922, p. 36.

The Duties of a Banker

THE EIGHTEENTH CENTURY VIEW

By J. K. Horsefield

I

The Bank Charter Act of 1844 has given rise to more economic controversy than, perhaps, any other single legislative enactment. Nevertheless it is by no means easy to discover a critical survey which adequately and impartially covers the sixty years during which there developed the ideas which the Act embodied. It has, indeed, been customary to describe the background of the Act as the clash between the 'Currency' and the 'Banking' Principles, but to do so is to overlook the environment in which these developed, and the degree to which each was indebted to preceding views. Far from the controversy emerging after 1832, as is sometimes suggested, it dates back well before 1800, while the Banking Principle of 1844 was no more than an elaborated re-statement of views which had been held in the eighteenth century.

The attempt is to be made here to trace some of the early threads which, though often curiously twisted, can be discerned during the last quarter of the eighteenth century. Our purpose will be to shew how these formed a background for the gradual evolution of the regulating principle which eventually became dominant in the Bank Charter Act. This will involve a brief summary of the historical influences shaping men's thoughts, against which may be set a few illustrative excerpts from the economic literature of the period.

Briefly and roughly summarised, our thesis will be that from 1776 to 1844 the duties of a banker were the subject of a constantly progressive controversy. At the end of the eighteenth century the current doctrine, a crude form of the 'Banking' Principle—here to be known, from its weightiest exponent, as the 'Smithian' Principle—gave place to a new theory, which, though based upon a rule-of-thumb previously in use, was not given theoretical shape until 1800–2, and only acquired popularity in 1810; this theory may be called the 'Bullionist' view. The next stage was a gradual transition from the 'Bullionist' position to a more rigid one, and the emergence of a new doctrine, the 'Currency' Principle. This development was intensified by the events of 1825, which seemed to disprove the contentions both of the 'Smithian' school and of the 'Bullionists'. But the new theory was itself vulnerable, and was attacked by a fourth group of theorists, viz.: the supporters of the developed 'Banking' Principle as we regard it to-day. Of this considerable study, only the introduction can be attempted within the limits of this article, but its argument will not be clear unless the foregoing outline is borne in mind.

II

Our present concern is with the last few years of the eighteenth century, with the actions of the Bank of England in the various crises which confronted it, and with the rationalisation of its actions which emerged from the deliberations of the Committees of 1797. But in order to place these developments in their right perspective we must first enquire what guidance was offered to bankers by the theoretical economists of the day, whose views, in turn, must be seen against those of their predecessors. Throughout the whole century, indeed, the significance of bank-notes was being discussed, now from one angle and now from another. Frequently the analysis was mixed up with that of currency inflation, though the latter had actually been made clear much earlier—if not at the time of the Great Debasement, at least by the time of Cary.[1] For our purposes, however, we shall need to fasten only on those passages which attempted to answer what we may call the bankers' problem—what were the limits to the safe creation of bank-money to supplement that provided by the State?

It was John Law who first brought this question to a head, by explicitly urging the immense benefits to trade to be derived from paper money, and then implicitly demonstrating its dangers. His theories may be illustrated by a quotation from *Money and Trade considered* (1705):

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[1] *An essay on the coin and credit of England* (1696).

> "Good Laws may bring the Money to the full Circulation 'tis capable of, and force it to those Employments that are most profitable to the Country; but no Laws can make it go furder nor can more People be set to Work, without more Money to circulate so as to pay the Wages of a greater number."[1]

On this basis he eventually succeeded in founding in France the *Banque Générale*, which later became the *Banque Royale* and collapsed in 1720 with a crash which had European repercussions. It has been argued that the immediate responsibility for the breakdown must be attributed less to Law than to the French king, whose credit-worthiness was so bad that the Bank's change of name automatically deprived it of the confidence of the business community. But contemporaries were not deceived. Specious as were Law's arguments, practical men were subsequently very mistrustful of anything resembling the 'System'. What Law left behind was an unsolved query—How to utilise the reflationary possibilities of bank-money and yet avoid the risk of repeating such a breakdown.

That there existed an automatic mechanism by which this problem solved itself was the grand discovery of the remainder of the century. Cantillon led the way. In his *Essai sur la Nature du Commerce*, written between 1730 and 1734, he takes the view that there is a maximum note-issue which can be kept in circulation in any area, and that this is determined by the habits and customs of the commercial population. This is particularly clear in his discussion of the Bank of Venice, of which the relevant passages may be summarised as follows:

> "It is found that the sellers and buyers of the Bank money are regularly equal when the total of all the credits or inscriptions on the books of the Bank do not exceed the value of 800,000 ounces of silver or thereabouts.
>
> "Time and experience (according to my informant) have given this knowledge to the Venetians. When . . . the State being pressed for money gave to the War Contractors credits in Bank money instead of silver and doubled the amount of its credits . . . Then the number of sellers of Bank money being much greater than the buyers Bank money began to be at a discount . . . [The] only remedy found for this disorder was to . . . borrow Bank money at interest. By these borrowings of Bank money half of them were cancelled and then the sellers and buyers being about equal the Bank regained its original credit and the total of Bank money was brought back to 800,000 ounces of silver."[2]

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[1] *Op. cit.*, p. 13.

[2] *Op. cit.*, pp. 410–412 (Higgs' edition, pp. 309–310). For another quotation illustrating the same point see the present author's "The Bank and its Treasure," ECONOMICA, May, 1940, pp. 174–5.

The total of Bank money to be created was thus determined purely empirically, and as long as this total was not exceeded, the bankers need have no qualms.

This temporary optimism was shattered by Hume in his essay on *Banks and Paper Money*, published in 1762. Hume quite saw the advantages of bank-notes; he quotes as illustration the assistance given by the Edinburgh banks to the growth of Glasgow's trade. But he also recognised the possibility of over-issue, since he considered the consequences of such an excess—rising prices, and the impoverishment of the community through a drain of gold. He was therefore driven to advocate that notes should only be issued on the principle of those of the Bank of Amsterdam, which represented bullion safely stored away.[1] Failing this, he did not see how bankers could determine what the size of their issues ought to be.

First steps towards a re-statement of the automatic mechanism were taken by Sir James Steuart, in his *Inquiry into the Principles of Political Oeconomy*, published in 1767. Here we meet the views of Law, Cantillon and Hume linked in an uneasy partnership. Steuart was emphatic that loans, to be secure, must be based upon land or securities, and not upon public or mercantile credit. It was to the breach of this rule, and not to any inherent unsuitability of land as a basis for note-issues, that he attributed[2] the downfall of Law's schemes. Normally, he believed, the circulation of a country could only absorb a determinate amount of money (coin and paper); the less use made of coins, the more use would be made of paper, and *vice versa*. But if trade increased, and advances on securities, which he calls 'alienation', were enlarged, so, *ceteribus paribus*, would be the quantity of money.[3] A large supply of paper, such as was liable to be issued by banks making advances on mortgages, leads, when the balance of trade is adverse, to a drain of gold. But—and this was the hopeful point—in an industrious nation, having a favourable balance of trade, it would not be disadvantageous.[4] It will be apparent that the dangers of inflation were here disregarded. Indeed, Steuart goes on to recommend that since a drain of gold due to an adverse balance of trade would deplete the circulation, banks should not respond by curtailing their issues of paper ; rather they should increase them, knowing that the paper was required for purposes of trade, and would therefore not come back to them to be turned into coin.[1] In brief, as long as loans were issued for suitable purposes, and on proper security, all would be well. Here, clearly, is the first foreshadowing of the reassuring argument which we have dubbed the "Smithian Principle," that if the banker confines his advances to the needs of trade, the circulation of the country will automatically adjust itself to the optimum amount.

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[1] Or were supposed to do so. By about 1790 the Bank was discovered to have been making additional advances on the security of the bullion in its possession, so that nobody knew how much of the bank-money current represented bullion-receipts and how much had no metallic backing. There is some evidence that this was suspected earlier, but that these suspicions were admitted by the educated only with great reluctance. See Steuart, II, 307.

[2] *Op. cit.*, Book IV, Ch. 23–24. [3] *Ibid.*, II, 171. [4] *Ibid.*, II, 231.

More traces of the growing idea are to be found in the work of an anonymous writer, identified by McCulloch with the Rev. Robert Wallace. His pamphlet *Essay of Banks and Paper Credit*, published in 1768, followed common form in stressing the beneficial effects on employment of the expansion of bank-money. He then proceeded to argue that the more notes circulated by the banks, the more would trade and industry be promoted

> "nor can there be any limit, while the borrowers from these banks can give good security and the managers take care to issue no more notes, than, by experience, they have learned, they can answer, according to the ordinary course of demand."[2]

And to make quite clear his belief in the efficacy of this safeguard, he adds explicitly :

> "Credit can never be given without end. None will give credit but to men either of substance or integrity, prudence and activity. Here there are *natural* checks and limits, beyond which credit will not be extended."[3]

So we reach the *Wealth of Nations* (1776–8) which so completely overshadowed its predecessors that almost all subsequent controversialists quoted Smith alone. It will be necessary to bring out the weaknesses of Smith's position in later stages of this discussion, since it was from a discovery of them that subsequent writers moved on to more adequate views. But for the moment it is proposed only to summarise the views on banking to which Smith gave expression.

Smith conceived that

> "The whole paper money of every kind which can easily circulate in any country never can exceed the value of the gold and silver, of which it supplied the place, or which (the commerce being supposed the same) would circulate there, if there was no paper money."[4]

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[1] *Op cit.*, II, 176.
[2] *Op. cit.*, reprinted in McCulloch, *Tracts on paper currency and banking.*
[3] *Ibid.*
[4] *Op. cit.* (Cannan's edition), p. 283.

Now this phraseology was ambiguous. It could on the one hand be held to imply that the appropriate limits for a circulation of paper should be the quantity of gold and silver which would circulate in the country if the paper were absent. Colour was given to this interpretation by another passage :

> " By issuing too great a quantity of paper, of which the excess was constantly returning, in order to be exchanged for gold and silver, the Bank of England was for many years together obliged to coin gold to the extent of between eight hundred thousand pounds and a million a year."[1]

It was in this sense that Smith was understood by at least some of his immediate successors ; by Thornton, for example, who regarded this passage as tantamount to advice to the Bank to restrict its issues when it was losing gold. It seems probable that it was so regarded, if at all, by the Directors of the Bank themselves ; this point will be discussed below. The significant fact is that this interpretation was the root of the Currency Theory, which accordingly gave rise to the attribution to Smith, by some writers, of both Currency and Banking Theories.

But it was to the latter of these views that Smith lent clearer authority, and he may have intended even the passages quoted above to be understood as implying no more than that a paper-money which was not abused would automatically conform to a metallic standard. This was the point of view expressed in such passages as the following :

> " When a bank discounts to a merchant a real bill of exchange drawn by a real creditor upon a real debtor, and which, as soon as it becomes due, is really paid by that debtor, it only advances to him a part of the value which he would otherwise be obliged to keep by him unemployed. . . If the paper money which the bank advances never exceeds this value, it can never exceed the value of the gold and silver which would necessarily circulate in the country if there was no paper money ; it can never exceed the quantity which the circulation of the country can easily absorb and employ."[2]

The emphasis on ' real ' and ' really ' in this passage was due to his desire to distinguish such bills from the accommodation paper which led to a continual drain upon bank reserves.[3] Thus

> " should the circulating paper at any time exceed that sum, i.e. the value of the coin it replaces . . . the excess . . . must immediately return upon the banks to be exchanged for gold and silver. Many people would immediately perceive that they had more of this paper than was necessary for transacting their business at home, and as they could not send it abroad, they would immediately demand payment of it from the banks. When

[1] *Op. cit.* (Cannan's edition), p. 285. [2] *Ibid.*, p. 287. [3] *Ibid.*, p. 275.

> this superfluous paper was converted into gold and silver, they could easily find a use for it by sending it abroad."[1]

It was in foreign purchases, too, that Smith expected to find used the gold and silver which would have been in circulation had there been no paper.

As regards the safety of banking from the point of view of the public, Smith held that

> "A paper money consisting of bank notes, issued by people of undoubted credit, payable upon demand without any condition, and in fact readily paid as soon as presented, is, in every respect, equal in value to gold and silver money."[2]

The emphasis here was on instant convertibility, as opposed to the Optional Clauses which at one time were contained in the notes issued by certain banks.[3] It was thus clear that Smith himself did not rely unreservedly upon the automatic principle which he had enunciated. This is also apparent from his opposition to the issue of small notes, on the grounds that permission to issue them encouraged men of straw to set up as bankers, and that they banished gold and silver from the circulation.[4]

Nevertheless, when these qualifications have been admitted, we are left with the chief intellectual basis of banking theory at the end of the eighteenth century—a belief that to supply the needs of trade was not only to fulfil most adequately the purpose of banking, but to avoid any danger of over-issue. All that a banker had therefore to do was to maintain convertibility of his notes by holding a judicious reserve of bullion, and he needed to have no fear of causing commercial difficulties. It was a theory which could have been accepted only in days when the Trade Cycle was not recognised, even though it had just begun[5]; when notes (not deposits) were the prime vehicle of bank advances; and when the compulsory restriction of the rate of interest prevented the evolution of any theory of Bank Rate. The next half-century removed all these simplifications, and thus inevitably refined the crude views here expressed.

III

So much for the theorists. Our next question must be, what light does the policy of the Bank, so far as we know it, throw upon its attitude towards these problems? Does it appear that the Bank believed in the Smithian principle, or did it consider that conscious action on its part was required to maintain its liquidity?

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[1] *Op. cit.* (Cannan's edition), p. 283. [2] *Ibid.*, p. 307.

[3] *Ibid.*, p. 308. The Optional Clauses were prohibited in 1765 at the instance of the Bank of Scotland and the Royal Bank of Scotland, because they tended to encourage over-issue.

[4] *Ibid.*, p. 306.

[5] *Cf.* "Industrial Activity in the Eighteenth Century," by J. H. Wilson, ECONOMICA, May, 1940.

In general, unfortunately, the glimpses of the Bank's activities which are all we have are too dim to illuminate this rather subtle issue. But four times between 1783 and 1797 it took positive action. In the spring of 1783 it refused to make its customary advances to the Government, withholding these until September of that year. In 1793, it restricted its private discounts in a time of acute commercial pressure, so that recourse had to be had to the issue of Exchequer Bills to provide business men with liquid assets. In December, 1795, it cut down its commercial discounts once more—this time because of the rapacity of the Government in borrowing from it. Finally, in February, 1797, it obtained permission to discontinue payment of its notes in gold. We must first develop the reasons for these decisions, and then try to systematise them into a coherent view.

It will be convenient first to summarise some of the principal Bank of England statistics for the relevant years :[1]

Date (end of month)	£ Millions			
			Securities	
	Circulation	Bullion	Public	Private
Aug. 1780 ..	6·3	4·2	6·7	3·6
Feb. 1781 ..	7·1	3·3	8·6	2·5
Aug. 1781 ..	6·3	2·9	6·6	4·5
Feb. 1782 ..	8·0	2·2	10·3	3·4
Aug. 1782 ..	6·8	2·0	9·0	4·5
Feb. 1783 ..	7·7	1·3	10·0	2·8
Aug. 1783 ..	6·3	0·6	9·6	4·3
Feb. 1784 ..	6·2	0·7	7·8	3·8
Aug. 1784 ..	5·6	1·5	8·4	4·1
Feb. 1785 ..	5·9	2·7	7·2	5·0
Aug. 1785 ..	6·6	5·5	6·7	3·2
Feb. 1786 ..	7·6	6·0	6·8	3·5
Aug. 1786 ..	8·2	6·3	8·0	2·4
Aug. 1791 ..	11·7	8·1	10·9	1·9
Feb. 1792 ..	11·3	6·5	9·9	3·1
Aug. 1792 ..	11·0	5·4	10·7	3·2
Feb. 1793 ..	11·9	4·0	9·5	6·5
Aug. 1793 ..	10·9	5·3	10·4	4·4
Feb. 1794 ..	10·7	7·0	9·9	4·6
Aug. 1794 ..	10·3	6·8	8·9	3·6
Feb. 1795 ..	14·0	6·1	13·2	3·6
Aug. 1795 ..	10·9	5·1	13·2	3·7
Feb. 1796 ..	10·7	2·5	13·0	4·2
Aug. 1796 ..	9·2	2·1	10·9	6·1
Feb. 1797 ..	9·7	1·1	11·7	5·1
Aug. 1797 ..	11·1	4·1	8·8	9·5

[1] *Report from Committee . . . . . on Bank of England Charter*, 1832, Appendix 5.

It is clear that the greatest shortage of bullion occurred in 1783–4, and yet the Bank's action at that time was less disturbing than in any of the three subsequent years which have been mentioned. That this was so appears partly to have been due to the prescience of Samuel Bosanquet, to whom is attributed the policy of the Bank in 1783. He was examined on the subject by the Committees of Secrecy, 1797. Giving evidence before the Lords' Committee on March 20th of that year, he was asked:

> "It appearing by the Scale of Cash in the Bank in 1783 that it was much lower than on the 26th February last, can you state to the Committee what measures were then pursued by the Bank?"

In other words, the Committee wanted to know why the Bank had asked to suspend cash payments in 1797, though they had more cash in hand than in 1783, when this was not found necessary. Bosanquet replied:

> "In the first period [i.e. 1783] the drain of cash proceeded from the great extension of commerce which followed the peace, and which occasioned so considerable an export of the commodities of this country that the circulation was hardly sufficient to support it. It was evident that if this drain could be supported for a short time the influx of wealth that must follow from the return of the amount of the Exports would amply compensate for the preceding drain, and so it turned out. The Bank Directors, therefore, without opening the state of affairs to the Administration, took a bold step of their own authority, and refused to make the advances on the loan of that year; this answered the purpose of making a temporary suspension in the amount of the drain of the specie. The time at which they had the most ground of alarm was not when their cash was at the lowest, but about April or May, when they refused to advance on the loan, and although in October their cash was lower than before, yet they had such reason to expect a turn in their favour by a favourable alteration of the exchanges, that they were under much less apprehensions than they were in the Spring. It is notorious that the situation of public affairs, at the beginning of the present year, was totally different."

While no direct reference is here made to the situation in 1793, it may be confidently assumed that the war with France which began on February 1st, 1793, was emphatically part of the "totally different situation" to which Bosanquet alludes. In fact the crisis of 1793 was precipitated by country bank failures directly attributable to the outbreak of war. These caused a heavy demand for Bank of England notes together with a marked fall in their velocity of circulation.[1] During the previous eighteen months the bullion in the Bank had been halved, falling from £8 million to £4 million, while private securities had risen from £1.9 million to £6.5 million, the highest figure recorded down to that date. It is not surprising that, despite the comparative strength of its bullion position and the fact that the exchanges were favourable, the Bank became alarmed at this new demand and refused further accommodation to country customers. The result was summed up by the Select Committee on Commercial Credit (April 29th, 1793):

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[1] Thornton, *Paper Credit* (Hayek's edition), pp. 97–98.

> ". . . The notoriety of Failures . . . the general embarrassment and apprehension which has ensued . . . and the influence which the state of Commercial Credit must have upon the . . . general Interests of the Country, appeared sufficient . . . to satisfy your Committee that the present situation strongly called for an immediate and effectual remedy . . ."[1]

This remedy was forthcoming in a scheme prepared at a meeting which had been held a week earlier at Pitt's private house. It provided for the creation of additional liquid assets in the shape of Exchequer Bills, to be lent to temporarily embarrassed firms. By this means the channels of trade were successfully thawed, and, as it proved, without loss to the Treasury. Clearly, therefore, the panic was due to a temporary need for greater liquidity, which the Bank could not this time meet by contracting advances to the Government, since these were needed to prosecute the War. Its actions met with criticism in some quarters[2] but it is noteworthy that no blame was attached to it by the Committees of 1793 and 1797. The latter, indeed, tended even to treat the Bank's conduct in 1793 as a model against which to shew up its shortcomings in 1797.[3]

But in the meantime the war went on. During the four years 1793–1797 some £98 million was raised, either by loans, or on Navy or Exchequer Bills, of which some £33 million was paid out abroad, partly to support our Allies, and partly to buy wheat.[4] Probably £22 million was remitted in specie. Very early in the war the Government began to use the Bank as a convenient means of supply. This was illegal, though the practice had grown up of making temporary advances on the security of uncollected taxes. Bosanquet, Governor of the Bank 1791–3, became nervous of incurring the penalties laid down in the Charter for infringement of this prohibition, and approached the Chancellor of the Exchequer for an Act of Indemnity, intending that further advances should be fixed at some limited amount—£50,000 or £100,000.[1] But Pitt, seeing his opportunity, secured the passing of an Act cancelling the prohibition altogether.[2] Thenceforward the Bank was at the mercy of the Government, and could only have checked the drain on its resources by the drastic step of refusing to pay the Exchequer Bills drawn upon it.

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[1] p. 3.

[2] e.g. Baring, *Observations on the establishment of the Bank of England, &c.* (1797).

[3] *House of Commons Committee, Third Report*, p. 10.

[4] *Ibid.*, Appendix 20.

In September, 1795, the situation became critical. The heavy overseas payments and loans to foreign powers, coupled with the intense demand for gold from France following the practical demonetisation of the assignats turned the exchanges against Great Britain. For ten months there was a continual drain of gold, while the Bank protested as continuously, but quite vainly, to Pitt.[3] Moreover, the number of Country Banks and their aggregate issues had markedly declined since 1793, so that there was a serious shortage of the circulating media. This again was aggravated on the one hand by the defectiveness of the coinage, and on the other by the extent to which, despite the legal penalties risked, full-weight coins were melted down and sent abroad to secure the profit on export.

Demands upon the Bank at the legal maximum rate became increasingly keen, until in December, 1795, the Court issued a notice that thenceforward commercial discounts would be restricted to a certain fixed sum each day. In other words, the Bank added systematic rationing of credit to the other weapons in its armoury—Bank rate, now proving ineffective; curtailment of the Government's credit, now impossible; and discrimination between metropolitan and country applicants, which was now inappropriate.

This step appears to have been taken by the Bank in a mood approaching desperation; its effect, as might have been foreseen, was to intensify commercial difficulties, and by the end of 1796 it needed only a relatively slight shock to destroy the insecure basis upon which the Bank was maintaining credit. This was administered by the rumour of a French invasion. A Newcastle Bank failed, others were threatened, their London correspondents came to the Bank of England for gold to support them, and the meagre bullion reserve dwindled daily. The Bank was in urgent correspondence with the Government, and on February 26th, 1797, a Minute in Council instructed the Bank to cease payments in specie until the will of Parliament was known.

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[1] *House of Commons Committee, Third Report, Bosanquet's evidence*, March 15th, 1797.

[2] 33 Geo. III, c. 32 (May 7, 1793).

[3] *Committee on Outstanding Demands*, 1797, *Third Report*, Appendix 9.

IV

The blow to confidence was severe. However vague the general idea might be about the duties of the Bank, the maintenance of convertibility was regarded as unquestionably one of them. Nevertheless, associations of merchants were rapidly formed, pledged to accept Bank of England notes as currency, and no serious commercial collapse actually occurred. It is probable that the Bank itself was equally reluctant to suspend cash payments ; this is suggested both by the urgency of its appeals to Pitt beforehand, and by the alacrity with which it offered to resume convertibility as soon as its bullion reserve improved. This, however, is a matter of history with which we are not directly concerned. Our problem is to discover, if we can, what hold the Smithian doctrine had secured upon the opinions of those who governed the Bank.

Adequately to answer this question would involve knowing just what were the rules by which the Bank was guided, and unfortunately these are veiled in secrecy. All that we have is the evidence tendered before the Committee of 1797, some extracts from which must now be given.

Several opposed schools of thought found expression amongst the witnesses. There were those amongst the Bank's representatives who were willing to accept a measure of responsibility for credit control—for example, Daniel Giles (Governor), examined on 31st March, 1797[1] :

> Q. "Do not the Bank Directors regulate their issues upon discounts by an attention to the proportion of Cash in their coffers and the amount of their outstanding Notes ?"
>
> A. "They ought to do so, and generally do regulate their conduct in consequence."

This view was also presented by unofficial witnesses. Walter Boyd, M.P., when asked about the causes of the drain on the Bank, cited[2]

> ". . . a resolution on their part to diminish the circulation of their Notes, and consequently of their discounts" [which] "diminished the powers of commercial houses, and diminished the value of public securities" [and, moreover] "has also the further serious inconvenience of diminishing discounts by all private channels."

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[1] All the evidence reprinted in this Section is from the *House of Commons Committee on the Outstanding Demands on the Bank*, 1797.

[2] *Evidence*, 18th March, 1797.

On the other hand, some of the Bank's spokesmen contended that the suspension was not their fault. Thus Thomas Raikes, Deputy Governor, examined on 13th March, 1797 :

> *Q.* " Is it your opinion that the drain at the Bank for Cash must be proportioned to the quantity of Bank Notes in circulation ? "
>
> *A.* " I look upon the present drain to have been produced by political causes. We have often known a larger quantity of Bank Notes out without producing any drain."

It seems, also, that any actual attempt to control credit must have been purely empirical, since Samuel Bosanquet expressly stated[1] that

> ". . . although the Directors have Attention to the State of their Cash and Notes out, yet they have no stated or precise Rule to regulate their Conduct."

This curious combination of insight and irresponsibility has tended to create the impression that the Bank in the eighteenth century either had no policy, or was swayed by the easy Smithian optimism of its representatives before the Bullion Committee of 1810. But the facts belie this aspersion. It is clear that the Bank was prepared to act, and did act, firmly when the need arose ; the various instances cited in Section III prove this. That it was unable to rationalise its actions may be attributed to the limiting factors which circumscribed its activities—the legal maximum for the Discount Rate and the voracity of the Government's demands for accommodation. Credit may be given to the Bank for maintaining an unequal struggle as long as it did. We may go further, and concede that the Bank probably realised that the Smithian doctrine was actually inapplicable to its own situation. Smith had postulated that all advances must be made upon the security of sound trade bills. The Bank, on the contrary, was constantly a creditor of the Government ; that it suspected this was the cause of its difficulties seems clear from its actions in 1783, and is supported by its appeals to Pitt from 1793 to 1797. As the latter shewed, the Bank's most serious difficulties began when Government borrowings could no longer be restricted, for commercial paper had then to be cut down. Three times in four years this latter curtailment weakened confidence—in the crisis of 1793 ; on the Bank's announcement in December, 1795 ; and immediately prior to the suspension of convertibility in 1797. The Bank may well have wished itself in a position where it could have experimented with the Smithian doctrine; in its actual circumstances a readiness to satisfy all the demands of trade would only too clearly have been disastrous.

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[1] *Evidence*, 31st March, 1797.

But how, then, are we to account for the curious fact that in the years after 1800, when the fallacies of the Smithian doctrine were being exposed by Henry Thornton and a succession of lesser pamphleteers, the Bank's own clearer view began to grow dim? Why should the Bank be found, in 1810, denying the principles of credit control which were implicit in the evidence tendered on its behalf only thirteen years before?

To this crucial question, two answers may be briefly offered. The first is to be found in the significant fact that whereas the spokesman of 1783 (Mr. Bosanquet) had quoted the state of the exchanges as the appropriate guide to action,[1] the Governor of 1797 (Mr. Giles) referred only to the state of the Cash.[2] During the intervening fourteen years the earlier criterion had receded into the background. The second explanation must be that the Bank's grasp on the principles of banking had been only a negative one. The Governors realised instinctively that when Government loans abounded the Smithian principle would not work; but they cannot have appreciated its fundamental fallacy.

It was their misfortune that the circumstances of their time conspired with these two failings to lead them into error. Samuel Bosanquet had seen, what Adam Smith had not made clear, that adverse exchanges might be caused by a policy of advances even on apparently sound paper; and so long as his principle was followed, the conception of meeting the needs of trade could not be allowed to over-ride discretion. But this criterion was forgotten, and then there remained only the state of the Cash. The Governors seem to have thought that so long as this was satisfactory the Smithian Principle must be working smoothly, but this was a delusion, for the Smithian Principle had depended implicitly upon the maintenance of convertibility. Unless notes were encashable, there was no means by which their over-issue could be either detected or corrected. And while from 1797 to 1821 the notes of the Country Banks were by convention payable on demand in Bank of England Notes, which maintained a check upon the provincial issues, the Bank of England Notes themselves were wholly uncontrolled by any requirement of convertibility at all. What the Bank forgot was that Mr. Giles could no longer be influenced by variations in the Cash when the Cash had become inviolable. They watched with complacence an index which the events of 1797 had deprived of any significance at all.

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[1] Above, p. 45.

[2] Above, p. 48.

Thus, as it were by accident, the Bank slipped back while theory marched forward. Thereafter it was as if the Bank was always one step behind ; espousing the Smithian doctrine before the Bullion Committee, it moved on by 1827 to the Bullionist view, already out-moded, and was still holding this when in 1844 it was immured in the strait-jacket of the Currency Principle's restrictive code. But the clash of theories which for fifty years sprang from the fountain-head of 1797 cannot be considered here.

Our point is, after all, a simple one. In the later eighteenth century the only theoretical discussion of a banker's duties—the Smithian analysis—was incomplete. An instinctive realisation of this led the Bank, in its best days, to substitute practical criteria for theoretical principles. So long as circumstances permitted these criteria to function, the Bank maintained control. But Governmental needs in a major war undermined, as so often since, the normal machinery on which the Bank had come to rely ; and there was nothing in the Bank's understanding to take its place. By the intellectual aridity of their counsels in the early nineteenth century, the Governors lost in ten years the leadership which the Bank had built up over a century and forced it to fight a hopeless rearguard action against the awakened economic sense of the world around. There can be no other explanation of the lamentable decline from the counsels of Samuel Bosanquet in 1783 to the apologia of Charles Bosanquet in 1810.

The Inter-Relations of Shipping Freights[1]

By W. Arthur Lewis

The purpose of this paper is to examine the connection between the different rates quoted for the use of tramp ships. In the past the literature of shipping has been content to dismiss this subject by saying that all such rates move together in the same direction except inward and outward rates, which move inversely. Our generation, however, requires more precise information. Until 1935 the tramp shipping market was one of the most competitive in the world, and the analysis of its behaviour was of academic rather than practical importance. But when in 1935 a price-fixing committee was established it became important to know the precise relations between different rates, and to examine the effects of fixing some rates while leaving others free. In the first half of this paper we shall analyse the pre-1935 relations, using some of the index numbers which have been published since the end of the last war. The second half of the paper will examine the effects of freight control.

I

Let us begin by examining the relation between voyage charter rates and time charter rates. A voyage charter is a contract of hire for a specific voyage, say from Australia to the United Kingdom; a time charter is a contract of hire for a specific period of time, which may be long enough for several voyages. The time charter rate is therefore normally a "long term" rate, and the voyage charter rate a "short term" rate. Before the War of 1914–18 twelve months was about the 'normal' period for a time charter, and two and three year charters were not uncommon; but in the

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[1] This paper owes much to conversations with Mr. W. T. Stephenson and to correspondence with Mr. E. A. V. Angier, Mr. G. H. Hopkins and Dr. L. Isserlis, none of whom, however, is committed to its conclusions. Some of the computations are the work of the Economic Research Division of the London School of Economics.

post-war decades charterers (i.e., the persons who hire from the owners) have been less willing to commit themselves; six months has become the normal, and time charters for so short a period as one voyage are quite common. There are, however, marked cyclical fluctuations in the period of the modal time charter. When conditions are booming, and rates expected to rise, charterers are anxious to cover their tonnage requirements for longish periods, and twelve month charters become quite common. When conditions are expected to decline charterers are less anxious to commit themselves, and periods of less than six months are the rule. Owners too are not keen on long time charters when rates are low, as an upward turn during the period may be accompanied by a rise in running costs. There are similar fluctuations in the volume of business, since the liner companies, who charter to meet temporary increases of demand in regular trades, are naturally most active at the height of a boom in world trade.

Time charter rates are linked with voyage charter rates both on the supply side and on the demand side. On the supply side, the shipowner has the alternative of seeking a time or a voyage charter. On the demand side, some merchants are indifferent as between time and voyage charters, and even if this were not so, speculators would take ships on time charter and re-let them on voyage charter if the former rate were out of step. The two rates must therefore move together.

By analogy with the capital markets, the current time charter rate should be equal to the average of current voyage futures. To put it broadly, the time charter rate should depend not so much on the current voyage rate as upon the expected trend of voyage rates in future months. If rates (and/or running costs) are expected to rise, it should be above the current voyage rate; if they are expected to fall, it should be below it. Such market reports as we have comparing time charter rates for short periods with time charters for long periods support this conclusion. For example, 1904 was a bad year for shipping: short charters therefore were available at a discount on long charters:

> " For the trade with the West Indies, etc., a very large number of steamers have been taken up; those over about 4,000 d.w. for two or four months at rates varying from 2s. 9d. to 3s. on deadweight . . . For longer periods, say

> six to twelve months or twelve months, rates were about 3d. to 4½d. more all round."[1]

The first nine months of 1937, on the other hand, saw rising freights; the rates for short and long charters were less than the rates for medium periods:

> "For round voyages from about 4s. 9d. to 7s. 3d. was paid. Longer periods were worth, say about four months, 5s. 1½d. to 6s. 9d.; six to nine months 5s. 9d. to 8s.; about twelve months 4s. 9d. to 7s. 6d.; and about eighteen months about 5s. 3d."[2]

Further confirmation is available from another source. The Chamber of Shipping has published an index number of time charter rates month by month from 1920 to 1937.[3] It has also published an index of voyage charter rates in the same period, both indices having 1920 as the base year. In comparing these indices we must remember that the voyage rate reported in any month is not strictly a 'spot' rate. During a slump there is usually idle tonnage at or near most ports, and the average voyage charter is for a ship to be available within a very short time. In a boom on the other hand, ships are booked up in advance; ships ready for immediate loading are not easily available, and if they were, their price would be above that of ships not required for another two or three months. The rates actually reported in any month and incorporated in the index are therefore 'futures' rates rather than 'spot' rates, and are lower than the spot rates would be. This means that in boom years the voyage charter index is somewhat lower than it would be if business were done on spot terms, and this must be remembered in comparing it with the time charter index.[4] The latter is based on the rates for a six months ship.

Chart I shows these indices on a logarithmic scale. It

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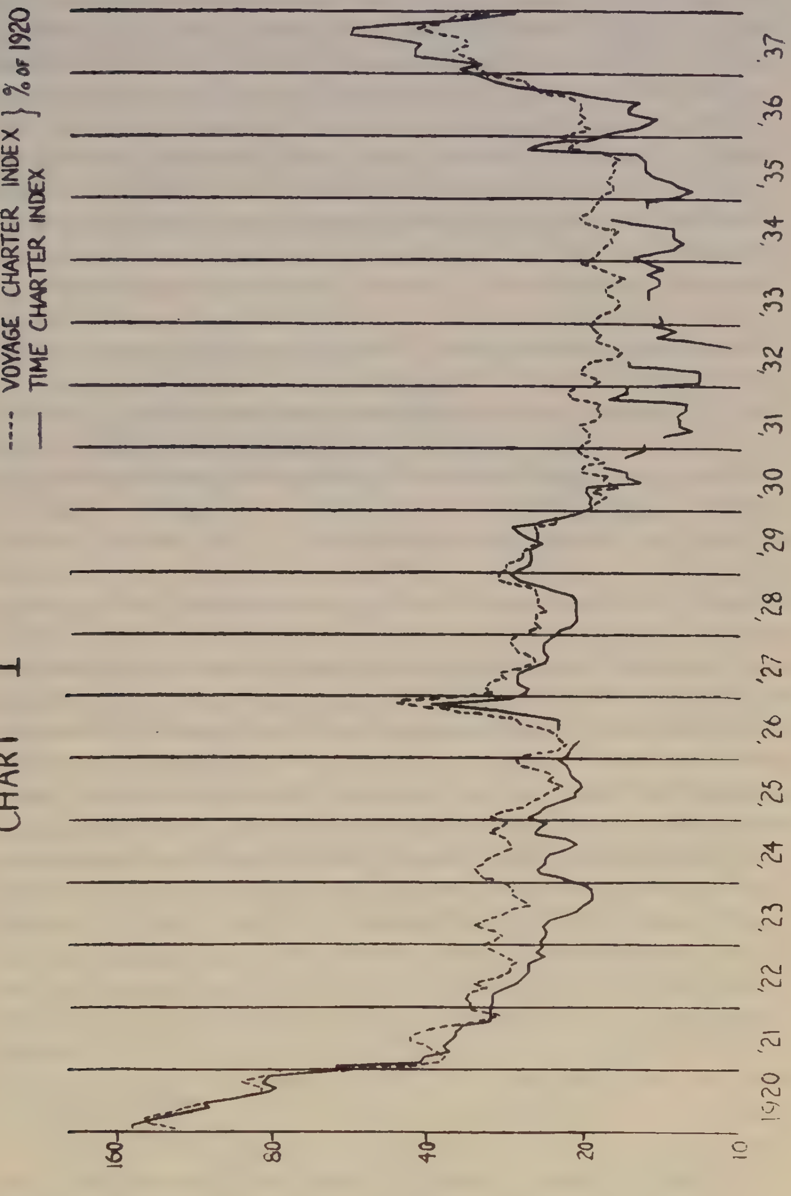
[1] E. A. V. Angier, *Fifty Years' Freights*, p. 118. This volume is a collection of the market reports circulated by the Angier Brothers during the years 1869 to 1919. For the student of shipping markets it is a gold mine.

[2] "Angier's Shipping Report for 1937," in *Fairplay* for 13th January, 1938. For other examples of the difference between long and short period rates see, e.g. *Fifty Years' Freights*, pp. 136, 143; "Angier's Shipping Report for 1926" in *Fairplay* for 6th January, 1927.

[3] See *Annual Reports* of the Chamber of Shipping. The indices also appeared monthly in the *Statist*. For details as to their construction see the *Statist*, 29th October, 1921.

[4] In making comparisons still further difficulties arise from the fact that the voyage index is underweighted for outward voyages and for voyages which neither commence nor end in Europe. Despite these defects, however, I believe that the comparisons can still usefully be made. Some of the defects have been remedied in the Chamber's new index number started in 1935. For a discussion of the index number problem see L. Isserlis, "Tramp Shipping, Cargoes and Freights," in the *Journal of the Royal Statistical Society*, 1938.

CHART I


---- VOYAGE CHARTER INDEX } % of 1920
— TIME CHARTER INDEX
160
80
40
20
10
1920
'21
'22
'23
'24
'25
'26
'27
'28
'29
'30
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'36
'37

will be seen that when the indices are equated for 1920 the time charter index lies below the voyage charter index in most years, but rises above it on certain occasions. It is to the margin between them that we must direct our attention.

Let us begin with the last year of the series. Autumn 1936 to Autumn 1937 was a boom year. Charterers rushed to cover their future requirements by booking ships well ahead. The time charter rate therefore rises much more rapidly than the voyage charter rate. In fact an unusual situation developed ; as the time charter market is small relatively to the voyage charter market it is usually the latter which dominates. But in 1937 so much business was done in time charters that for some time it was the time charter rate which pulled up the voyage charter rate. In the picturesque phrase of the market, the tail was wagging the dog. Towards the end of the year the boom ended, the time charter index again fell below the voyage charter index.

Running our eye backwards along the Chart we come to the last quarter of 1935, when the time charter index is again above the voyage charter index. This was due to the Abyssinian war. At its outbreak the market thought that there might be a general conflagration leading to a greatly increased demand for ships. Charterers extended their operations in the time charter market, and owners, anticipating a good future, demanded higher rates for long periods than for short. Within a month or two, however, it became clear that the Abyssinian affair would not have as great an influence as had been expected ; the time charter index sank back to its position below the voyage charter index.

1931–1934 were bad years. Owners, however, were always on the look-out for the end of the slump. The time charter index is therefore very sensitive. When the voyage rate shows a tendency to rise owners pick up courage hoping that this at last is the end of the slump ; the time charter index shoots up more rapidly than the voyage charter index, and then slumps down again when it becomes clear that the rise was only temporary. This explains the last quarter of 1931, the second quarter of 1932, and the third quarter of 1934.[1]

During 1929 and 1930 voyage charter rates were falling.

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[1] The explanation may have more plausibility than substance, as so many other factors were operating at the same time. The indices, too, should not be overstrained. The time charter market was very small during this period, as the liner companies took hardly any ships ; in some months, as in June and July, 1932, there were no quotations at all.

At first owners refused to believe that the fall could be very large or very long; they held up the time charter rate, and the voyage index fell below the time index. Even when it was realised that we were in for a major slump, the time charter index fell slowly and reluctantly. Whereas the voyage charter index reached its low levels early in 1930, the time charter index did not get down to its depression bed until a year later. This phenomenon is exactly paralleled in the 1920 slump. The voyage charter index fell rapidly to the end of 1921, and more slowly thereafter. The time charter index fell slowly until the end of 1921, and then for the next two years much more rapidly than the voyage charter index.

The other period which calls for special mention is the last quarter of 1926. The consequence of the coal strike in the latter half of that year was to stop the export of British coal. There were consequently no outward cargoes to contribute towards the expenses of ships; inward cargoes had to bear the full burden. The Chamber of Shipping's Voyage Charter Index, which is heavily overweighted for inward voyages,[1] shows an increase which is misleading. An index number which took account of the fact that outward cargoes were no longer available would show a much smaller increase. At the same time, there was an increased demand for shipping, and it is not inconceivable that the time charter index would lie above a voyage charter index duly weighted for outward cargoes.

We can now sum up the relation between time and voyage rates as follows. The two markets are connected and rates move together. But time charter rates fluctuate more widely than voyage charter rates. When conditions are improving long rates rise more rapidly than short rates. When conditions are deteriorating, owners at first hold out, so that the voyage rates fall more quickly than the time, and it is only later that the longer rates fall to a corresponding level.

II

Rates for voyages in one direction are traditionally said to move inversely to rates in the opposite direction; if the inward rate rises, the outward rate falls, and vice versa. We have now to examine the limitations of this tradition.

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[1] See footnote [4] on page 54.

In the first place, if the cargo moving in one direction exceeds the cargo moving in the other, there will be some ships travelling in ballast. For instance, if outward cargoes are the smaller, some boats will be going out in ballast, and the outward rate will be at its minimum. If then the demand for ships inward increases, the inward rate may rise, but the outward rate cannot fall because it is already at its minimum. On the contrary it may well rise. Carrying an outward cargo involves delay; the ship has to unload at some port not necessarily the same as that at which the inward cargo is to be unloaded, and several days may be lost in this way. When charters are hard to get the loss of a few days does not matter much, but when business is booming the profit lost may be considerable, and a boat will only accept an outward cargo if it more than remunerates for lost time. It is therefore a common feature of the market for outward rates to rise simply because the inward rates have risen.[1]

Secondly, if there is a general rise of homeward rates on all routes, there is no reason why outward rates should fall. In a competitive market the rates between *A* and *B* are governed by the condition that a ship must be able to earn on the inward and outward voyages together a profit per day equal to that which it could earn on inward and outward voyages between *A* and *C*. If the profit between *A* and *C* remains constant, then the profit on a round voyage between *A* and *B* is also given. Provided that ships are not moving in ballast, inward and outward rates between *A* and *B* will move inversely.[2] But if there is a general improvement in conditions—if the profit on a round voyage between *A* and *C* increases—then a rise in the rate from *B* to *A* need not be accompanied by any fall in the rate from *A* to *B*. Why should the owner take a lower rate to *B* because he can get a higher rate from *B*? The rate to *B* is governed by the cargo offering and the supply of ships. So long as conditions have improved on all routes, the increased rate from *B* need not be attracting any more ships to *B*, and consequently the rate to *B* need not fall. On the contrary, since the outward cargoes and inward cargoes usually rise together in boom years and fall together during the slump, we should expect inward rates and outward rates to rise and fall together.

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[1] For instance in 1937 the increase in outward rates was "produced partly by the increase in coal exports from the United Kingdom of nearly 6,000,000 tons over 1936, and partly by the abundance of lucrative business obtainable homewards. Owners of the larger and more modern vessels, especially motor ships, could see satisfactory profits on a run out in ballast and home at the good rates offered, and would therefore not take coals out unless at tempting figures". "Angier's Shipping Report" in *Fairplay*, 13th January, 1938.

[2] Not all voyages, of course, are round voyages; in fact it is quite common for a ship to do a "triangular" or "multilateral" voyage, wandering from port to port for many months before returning home. The effect of the existence of such voyages is to reduce the degree of fluctuation. Suppose, for example, that cargoes homeward from *B* to *A* increase. If all voyages were round voyages, all the additional ships required would have to come out from *A* to *B*, and the rate from *A* to *B* might be seriously depressed. But if some of the ships come to *B* from *C*, *D* and *E* the additional number required to go out to *B* from *A* is not so large and the outward rate is not depressed to the same extent. The more multilateral the voyage, the smaller, in the new equilibrium position, will be the rise in the inward rate and the fall in the outward rate. There will nevertheless be some inverse movement.

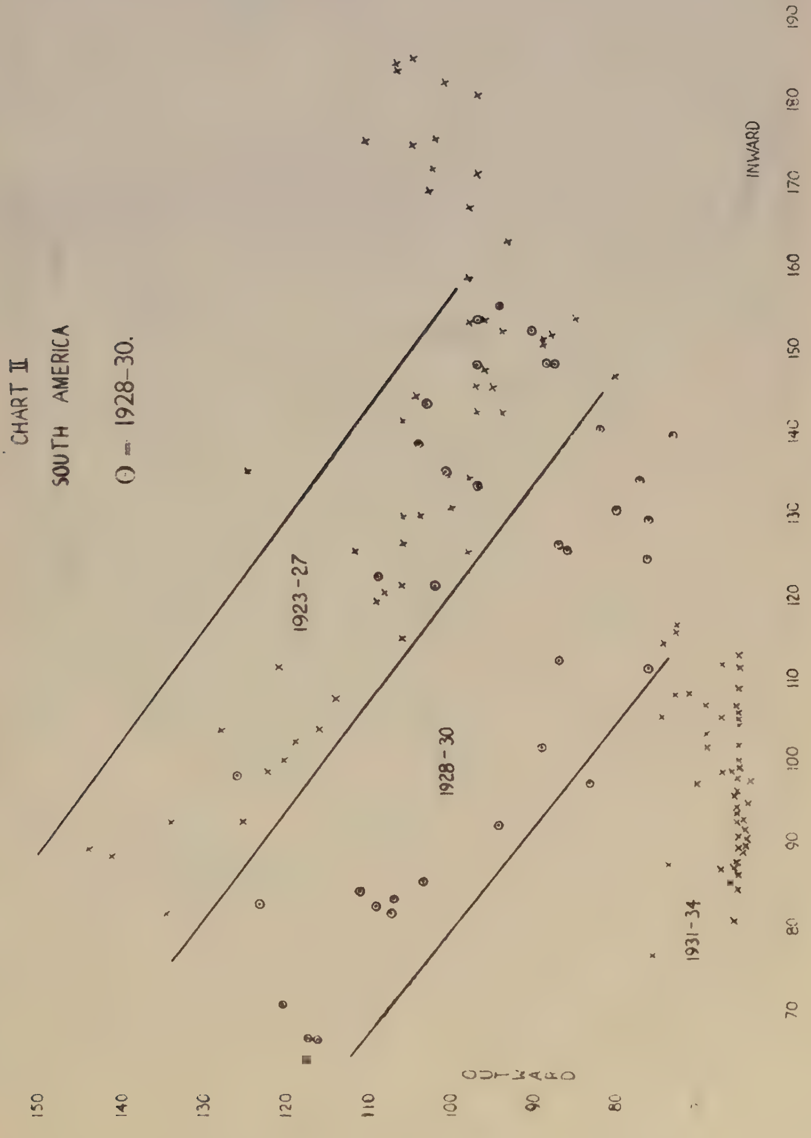
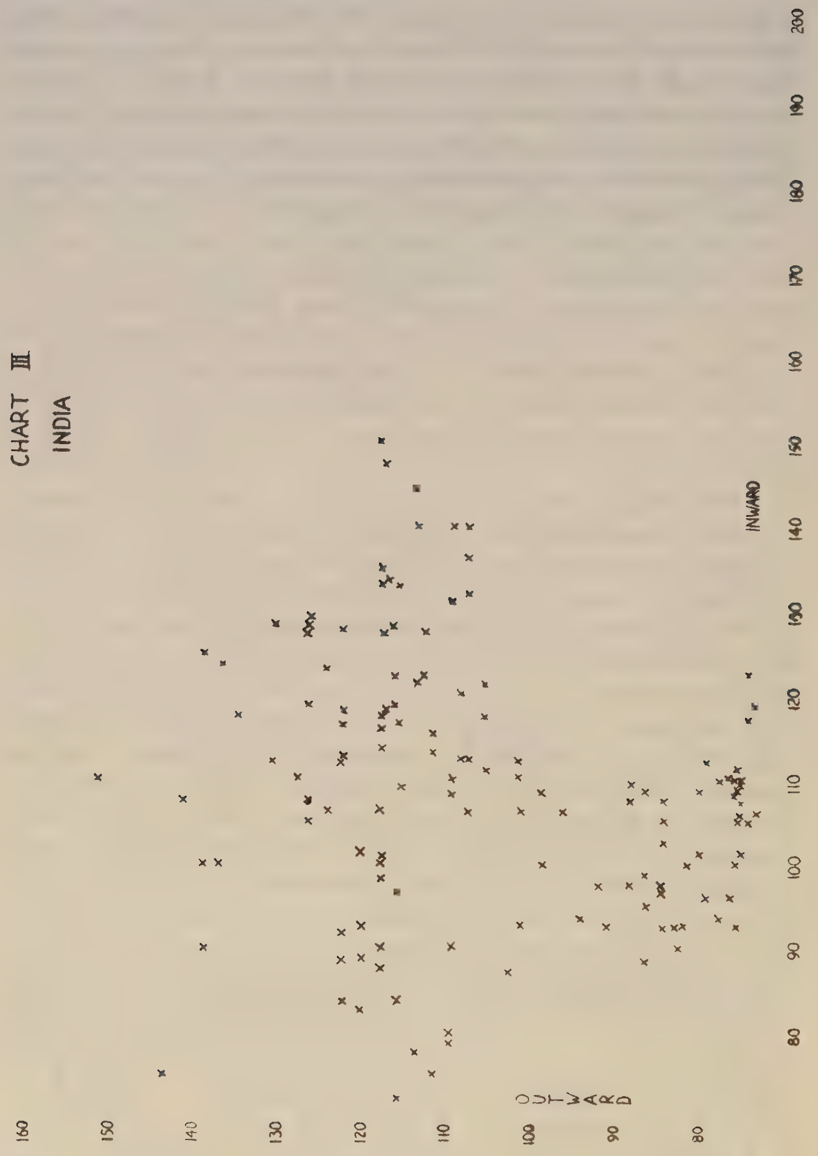


CHART III

INDIA



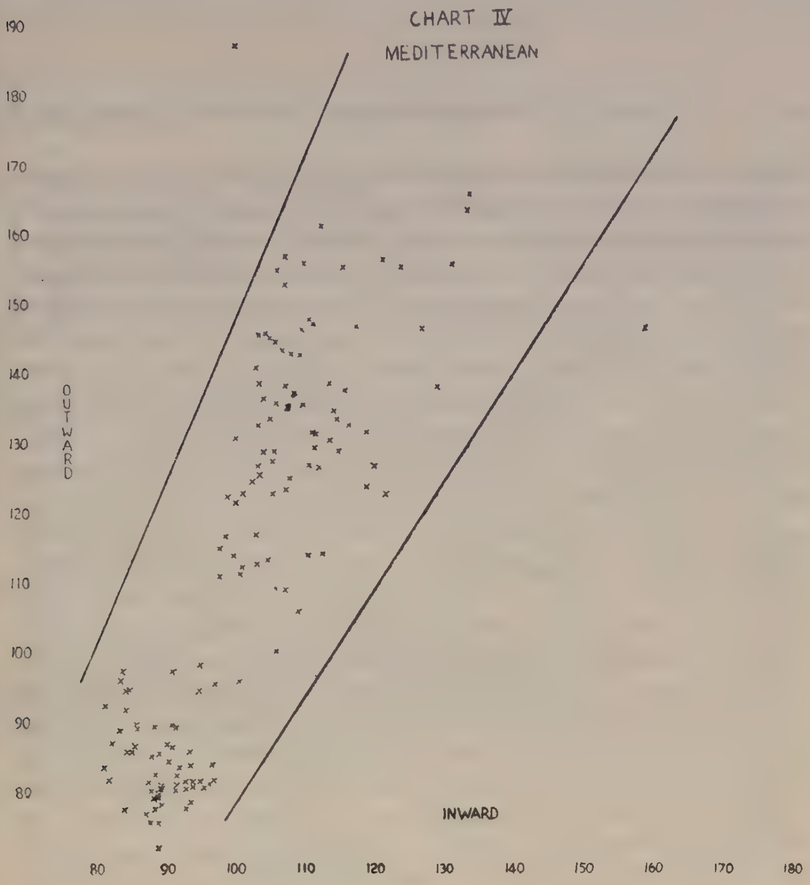


CHART IV

MEDITERRANEAN

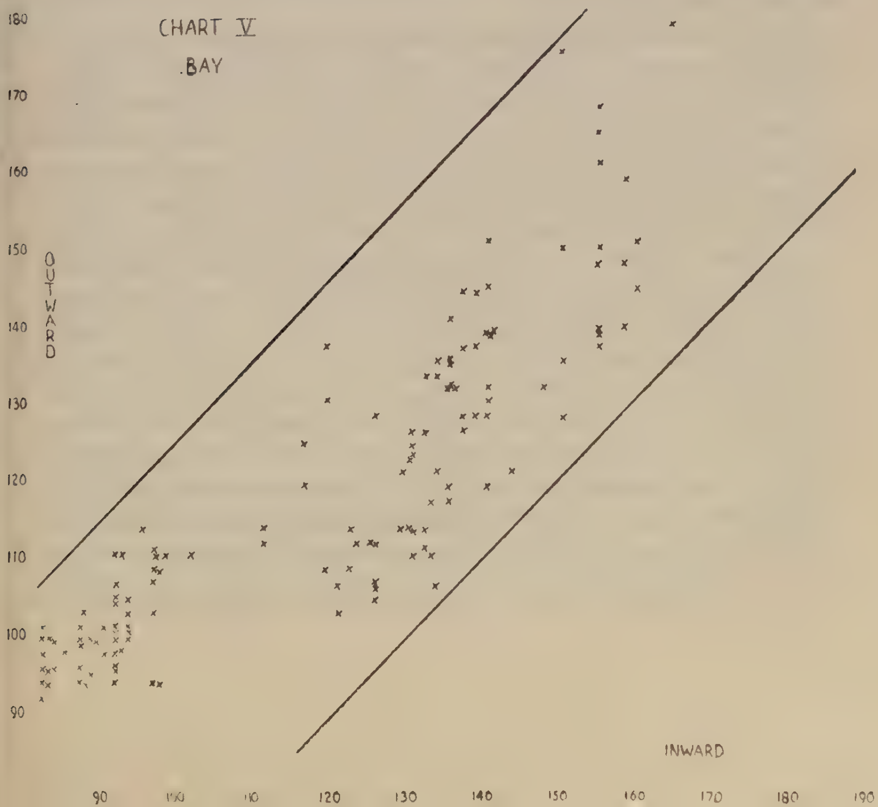


CHART V

BAY

There are therefore two tendencies at work in opposite directions. There is the tendency for inward and outward rates to move inversely on any one route when the general conditions elsewhere are stable; and there is the tendency for them to move together in the same direction when market conditions generally are changing. Costs also are important. Running costs tend to be high in the boom and low in the slump; and the secular trend of average costs is downwards because of technical progress. Costs affect both inward and outward voyages simultaneously, and raise or lower both rates together.

These tendencies can be observed in the available statistics. From 1923 to the outbreak of war in 1939 the *Economist* published a monthly index of inward and outward rates between Europe and South America, Europe and India, United Kingdom and the Mediterranean, and United Kingdom and Bay ports (Bilbao, Bordeaux), using the average of 1898 to 1913 as base.[1] In Charts II to V we have plotted these rates on scatter diagrams for the period 1923 to 1934. It will be seen that only in the case of South America is there a clear inverse relationship between the inward and outward rates. The Mediterranean and Bay show an even more marked tendency for the rates to move in the same direction.

In the case of South America the fact that the rates are not all clustered along one narrow line moving inversely is due to the tendency for the whole level of inward and outward rates to move downwards in bad years and upwards in good years. Given fairly stable conditions, however, inward and outward rates do move inversely. The highest "band" of rates is that for the period 1923–1927; except for a short period at the extreme right end of this band when inward and outward rates were falling together after the coal strike of 1926, rates moved inversely. Next comes the 1928–1930 band, lower than that of 1923–1927 because the decline in coal exports led in all markets to a fall in the level of outward rates without any compensating rise in homeward rates. The correlation coefficient for 1923–1929, taking percentage deviations from a twelve-monthly moving average is -0.455 ± 0.070. Finally in the period 1931–1934 there is no inverse relationship; outward rates are at their minimum and do not respond to changes in inward rates. The seasonal fluctuations for the period 1923–1934 (excluding 1926 when inward rates were abnormally affected by the coal strike) are as follows :

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[1] For details as to the construction of these indices see the *Economist*, *Monthly Supplement*, July, 1923.

PERCENTAGE DEVIATIONS FROM THE TREND

	J	F	M	A	M	J	J	A	S	O	N	D
Inward	+8·2	+3·9	—0·5	+3·1	+1·1	—6·4	—3·8	—2·0	—5·3	—4·9	+0·1	+6·5
Outward	—4·7	—0·2	—0·6	—2·0	—0·2	+2·6	+0·6	—1·3	+5·2	+5·1	+0·7	—5·0

The inverse movement is clearly marked.[1]

The scatter diagram for India is not very informative, the only clear feature being the points at the bottom of the diagram which illustrate the principle that inward and outward rates move independently when the latter have reached their minimum level. Correlation technique is more helpful ; indeed it is spectacular. For the whole period 1923–1929 the coefficient is only —0.199±0.084. If however we break this period into two, 1923–1927 and 1928–1929, the first yields a strong negative coefficient of —0.728±0.054, and the second an equally strong positive coefficient of +0.756±0.059. That is to say, during the period 1923–1927 inward and outward rates moved inversely, but during the next two years they moved together in the same direction, presumably because conditions were unsettled. The seasonal fluctuations for 1923–1934 are as follows :

PERCENTAGE DEVIATIONS FROM THE TREND

	J	F	M	A	M	J	J	A	S	O	N	D
Inward	+6·9	+1·7	—1·0	—3·3	—4·5	—7·3	—5·3	—2·3	—0·9	+1·5	+5·2	+9·2
Outward	—2·1	—1·6	—0·9	—1·6	+0·2	+1·0	—0·6	+1·6	+1·2	+2·9	+0·2	—0·3

The outward fluctuation is small and the influence of the earlier years is sufficient to make it the reverse of the inward fluctuation.[2]

When we come to the Mediterranean and Bay the scatter diagrams leave no room for doubt that inward and outward rates in these waters move in the same direction. For the Mediterranean the correlation coefficient is +0.532±0.063.

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[1] These seasonal figures and the correlation coefficient, being based on deviations from a twelve-monthly moving average, measure only the relations between seasonal and short term fluctuations, and do not take account of cyclical and secular movements in the trend. Thus a negative correlation of deviations from the trend is not incompatible with a positive correlation of movements in the trend. Dr. Isserlis has been good enough to show me the results of his correlations of annual averages of inward and outward rates on many routes from 1869 to 1926. They are strongly positive, indicating that the secular and cyclical movement of these rates is in the same direction. This conclusion is quite to be expected, and not incompatible with the conclusion that month by month movements may be in opposite directions.

[2] It is not possible to use the indices for India with much confidence. There are so few outward freights to India that the outward index must be treated with reserve.

For the Bay it is $+0.410\pm0.073$. The seasonal fluctuations also confirm this.

PERCENTAGE DEVIATIONS FROM THE TREND

Mediterranean	J	F	M	A	M	J	J	A	S	O	N	D
Inward	+2·5	+1·9	+1·8	+1·3	—1·2	—2·7	—3·8	—3·6	—2·0	+0·2	+2·2	+3·3
Outward	—1·5	+0·3	+2·5	+1·5	+4·5	+3·6	—1·3	—3·6	—2·1	—1·3	—1·3	—1·4
Bay												
Inward	+2·4	+2·1	+0·5	—0·6	—1·2	—2·2	—2·5	—2·9	—2·4	+0·8	+2·3	+3·3
Outward	—0·3	—1·4	—3·3	—3·3	—2·8	—2·7	—1·5	—2·7	+0·6	+5·1	+7·5	+5·2

The explanation here seems to lie in the fact that the market for these routes is isolated from the market for ships for other routes, because the ships on these routes are small and unsuitable for long distance ocean travel. Accordingly in the short period the inward rates are independent of the outward. The outward rate is set by the volume of cargoes offered and the number of ships, and nothing that happens in the inward market affects either of these two factors.[1] But since the general conditions which affect the market for inward cargoes also tend simultaneously to affect the market for outward cargoes, and in the same direction, it is not surprising to find inward and outward rates moving together.

The general conclusion of this section, therefore, must be that the relation between inward and outward rates is not a simple one. The traditional theory that the rates move inversely is adequate if (*a*) conditions are stable, (*b*) no ships are travelling in ballast, and (*c*) the route is not isolated from the market for other routes. Where any of these conditions is absent, inward and outward rates may move independently or in the same direction.

III

We have now to consider the relations between rates on different routes. What connection is there between rates between Australia and Europe, South America and Europe, South Africa and India, India and Europe, etc. ?

In so far as a ship can transfer itself from one route to another, one should expect the governing condition to be that the profit which the marginal ship can earn on all routes must be the same. This however is true in the long run rather than the short. A sudden increase in demand for shipping at Port X will lead to a rise in freights for ships on the spot. This increase may last a few weeks until more ships arrive, bringing the rate into equilibrium with rates elsewhere. Rates on all routes need not move together month by month, but divergencies cannot long persist.

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[1] In the short run the number of ships is more or less fixed, though 'ton-mileage' can be increased to a small extent by greater speed, quicker turn round, etc. In the long period more ships will be built if the round voyage yields abnormal profit, and this will tend to alter the relative level of rates to an extent depending on the relative elasticities of demand for shipping in each direction. Similarly, if the inward rate falls too low, some ships will be laid up, and this will tend to increase the outward rate (and vice versa).

Accordingly round voyage rates (the sum of inward and outward rates) should move together in the same direction, but not necessarily to the same extent.[1] In the first place, ships are interchangeable as between routes only within limits. In general the ships of under 2,500 tons keep to the coasting trades and seldom do ocean voyages. The medium-sized ships keep to the American trades and others of similar distance. The largest ships are to be found on the Australian route. At the margin there are transferences. A certain ship may be indifferent as between a voyage from Cardiff to Alexandria or to the River Plate. Another may be indifferent between Australia and the Plate. The marginal ship must get the same profit on whichever route it sails, but the margin shifts. If the rates for long ocean voyages are doubled it does not follow that the rates on short coastal voyages will also be doubled, since the majority of the ships engaged on coastal voyages are not able to take advantage of the high ocean rates.

Again the existence of out-of-pocket charges which are not the same for all routes affects the magnitude of the fluctuations. Compare for instance voyages on routes A to B and A to C, where ships on the C route must pass through a canal and pay a toll. If the rates on B route are doubled, it is not necessary for the rates on the C route to be doubled in order that ships should continue to be indifferent between the two routes. Suppose for instance that the two voyages are of equal length, that the out-of-pocket expenses on either voyage are £x, and canal dues on the C route £a. Then if the freight on the B route is £y, the freight on the C route must be £$y+a$. Then if the freight on the B route rises by 100 per cent. to £$2y$, the freight on the C route need only rise to £$2y+a$, which is less than 100 per cent. The absolute increase must be the same, but not the relative increase. The significance of this point is that the rates for ships on routes with canals, such as the Indian route, or routes where port or other out-of-pocket expenses are above the average, should tend to fluctuate less than the rates on other routes. It means also that rates on long voyages should tend to fluctuate more than rates on short voyages; since the port charges do not vary with the length of the voyage, the average daily out-of-pocket expense is smaller on the long voyage than on the short, and rates should tend to fluctuate more widely. On the other hand, if the port charges are small, time spent in port is less costly than time spent at sea because fuel costs are small and there is less wear and tear. On short trips the ship spends a greater proportion of its time in port than it does on long voyages; where port charges are small the average daily out-of-pocket expense is less for the short voyage than for the long, and short rates should tend to fluctuate most; but cargoes which are expensive to handle may lead to the reverse conditions. Again, if there are differences in daily out-of-pocket expenses on different routes, then a rise of xd. per day in running costs (wages, coal, etc.) will call for a greater proportionate increase of freights on the voyages where the daily out-of-pocket expense is least. The influence of differences in daily average out-of-pocket expense is diverse. Some of the differences tend to make short voyage rates fluctuate most, others tend to make them fluctuate least.

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[1] If a ship leaves port expecting to do not a round voyage but a multilateral voyage, then the condition is that the daily rate of profit on the voyage taken as a whole must not be less than could be secured on any other route. Some parts of the voyage may be abnormally profitable while others may even have to be done in ballast.

If we had adequate statistics of round and multilateral voyages we might try to see what the net effect has been in the past. Unfortunately the available figures are confined to inward freights, and a few outwards. The position is not however hopeless because we know that since the war of 1914–18 some ships have been moving outwards in ballast on all routes, and outward rates have tended to contribute little by way of gross profit. We can therefore use inward rates as a first approximation to an index of round voyage rates. The *Economist* index numbers of inward freights yield the following seasonal fluctuations for the period 1923–1934 (excluding 1926 as before), calculated as percentage deviations from a twelve-monthly moving average. They are arranged in order of their standard deviation.

	J	F	M	A	M	J	J	A	S	O	N	D
Australia	+6·9	+2·2	—2·2	—4·2	—7·2	—10·1	—8·3	—3·0	+3·3	+7·1	+7·0	+8·1
India	+6·9	+1·7	—1·0	—3·3	—4·5	—7·3	—5·3	—2·3	—0·9	+1·5	+5·2	+9·2
S. America	+8·2	+3·9	—0·5	+3·1	+1·1	—6·4	—3·8	—2·0	—5·3	—4·9	+0·1	+6·5
Far East and Pacific	+5·8	+3·4	+0·9	+0·3	—2·9	—5·2	—5·0	—3·5	—1·5	+1·2	+2·2	+4·8
N. America	+1·3	+3·0	+0·8	+2·3	+1·1	—4·0	—5·9	—4·2	—1·3	+0·9	+3·5	+2·5
Mediterranean	+2·5	+1·9	+1·8	+1·3	—1·2	—2·7	—3·8	—3·6	—2·0	+0·2	+2·2	+3·3
Bay	+2·4	+2·1	+0·5	—0·6	—1·2	—2·2	—2·5	—2·9	—2·4	+0·8	+2·3	+3·3

The standard deviations are as follows :

Australia	6·34
India	4·87
South America	4·54
Far East and Pacific	3·58
North America	3·00
Mediterranean	2·43
Bay	2·13

It will be seen that the shortest routes fluctuate least and the longest routes fluctuate most. This is all the more remarkable because rates on the longer routes might be expected to bear a similar relation to rates on the short routes to that which the long term rate of interest bears to the short term rate of interest. That is to say, the rates for long voyages should be a sort of average of the rates expected for short voyages during the next four or five months. In so far as seasonal fluctuations can be foreseen, the long rates should therefore fluctuate less than the short. That the reverse is the case suggests that the difference in out-of-pocket expenses is overwhelmingly in favour of the long routes. The evidence is not final, however, as inward freights are only a first approximation to what we are seeking. Outward freights tend to be more important on the short than on the long routes, while multilateral trips are more important on the long than on the short, and it is not clear how much allowance is to be made for these factors. Similar difficulties arise when we try to interpret the trend, which also shows differences in degree of fluctuation.

IV

We have now completed our analysis of " normal " inter-relations. It remains to consider the effects of freight control by the Tramp Shipping Administrative Committee (hereinafter called T.S.A.C.) which commenced operations in February, 1935.

T.S.A.C was the outcome of the Government's decision to pay British tramp shipowners an annual subsidy of £2,000,000. The subsidy was to be based on the number of days actually spent on tramp voyages. Clearly if the market had remained competitive the bulk of the subsidy would have accrued to charterers since British shipowners would have competed with each other and with foreign shipowners and with the liner companies for the limited cargo available. Marginal costs would have fallen by the amount of the subsidy, and the market being competitive, freights would have fallen correspondingly. To use the language of the trade, the subsidy would have been "dissipated".

This result is not inherent in all forms of subsidy. The basis of the subsidy might have been not days spent on voyages, but number of days laid up. The "Tanker Pool" had already been functioning successfully for a year on this basis. If the British Government had adopted this basis for its subsidy, it would have helped to raise freights since the marginal cost of running a ship would have been increased by an amount equal to the subsidy forgone.[1] Or the subsidy might have been based on tonnage owned, whether employed or laid up. It would then have had little effect on freights in the short run, unless owners now offered their ships at less than marginal cost for sentimental or other reasons. To base the subsidy on tonnage employed made it necessary to have machinery for fixing minimum freights if the subsidy was not to be dissipated.

The Government's choice of this basis seems to have been due to its desire to increase the employment of British ships at the expense of foreign ships. But it was faced with a dilemma. The employment of British ships could be increased if British shipowners were enabled by the subsidy to undercut foreign shipowners; but if they did this the subsidy would be dissipated. In so far as shipowners kept the subsidy, they could not have more of their ships employed. Of course some British owners would now be able to recommission ships previously laid up, and there would be more British ships on the market waiting for the limited number of charters available, but if no undercutting were allowed, there would be only a slight increase in the chance that any ship chartered would be British. T.S.A.C. maintained in its Reports that though a minimum freight was established from the River Plate the subsidy helped British shipowners in that market at the expense of foreign shipowners, but the evidence it offers is not significant. British, Dutch and Jugoslav shipowners improved their position in 1935 at the expense of the Italians, who were busy around Abyssinia, and the Greeks, who were in difficulties over insurance. But in 1936 the British percentage was reduced as the Italians and the Greeks reappeared on the market.[1] The main effect of the subsidy was to increase the receipts of shipowners, and this could have been achieved even more effectively if the subsidy had been based not on tons employed but on tons owned or tons laid up.[2]

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[1] For a description of the Tanker scheme and an analysis of its effect on freights see T. Koopmans, *Tanker Freight Rates and Tankship Building*. The British subsidy was actually distributed in such a way that owners with tonnage laid up got a slightly higher subsidy per ton employed than owners with less or no tonnage laid up; but there is no reason to believe that the difference was significant: see "A Baltic Broker's Log" in the *Shipping World*, 18th September, 1935.

T.S.A.C. was born of the subsidy, but it was not an official body, and it survived the subsidy. In 1935 and 1936 British shipowners were encouraged to support it because they would have forfeited the subsidy if they had not. 1937 was a boom year during which market rates were above the minima laid down by T.S.A.C. anyway. The real test of T.S.A.C.'s authority came in 1938 and 1939, during which its minimum rates were well above the market level, and no subsidy was payable. The respect paid to T.S.A.C.'s authority both by British and by foreign shipowners in this critical period when it had no power to enforce sanctions surprised all who had argued that tramp shipowners could not voluntarily be associated in a price-fixing scheme.

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[1] T.S.A.C. issued six half-yearly reports which were published as white papers. For 1935 see Cmds. 5004 and 5084; for 1936 Cmds. 5291 and 5363; for 1937, Cmds. 5555 and 5750. No reports were issued for 1938 or 1939.

[2] Dr. Isserlis comments: "There was an apparent inconsistency in the double object of (*a*) not dissipating the subsidy and (*b*) improving the employment of British tramp shipping. By the introduction of minimum freight rate schemes and the, in the main, wholehearted co-operation of Greek and Norwegian shipowners, the two objects were achieved during the period of low freights lasting from 1935 to the autumn of 1936. Such difficulties as occurred were due less to the failure to secure 100 per cent. willingness to co-operate than to two factors not referred to by you. The first was the habit, before 1935, of certain British and Norwegian shipowners to enter into long period contracts with charterers. They were not long period time charters, but contracts to lift a certain amount of cargo per year for some years ahead. The second was that the co-operation of German tramp and liner owners was formal only. Any owner, British or foreign, was under compulsion to carry out the instructions of the T.S.A.C. only if he were free to do so. Orders from his own Government to do something else relieved him from the obligation. On many occasions when British, Greek and Norwegian shipowners obeyed instructions not to proceed in ballast to the Plate, German tramp ships were loading homeward grain cargoes steadily although 50 or 70 British and other tramp ships had been waiting in the River Plate for weeks. The explanation was that these were German Government cargoes."

This is not to say that there was 100 per cent. loyalty. A scheme fixing minimum rates outwards to the St. Lawrence and United States was wrecked by the disloyalty of foreign shipowners. This scheme was originally in two parts: coals from U.K. and Baltic ports, and coals from Black Sea ports. The principal charterer in the latter market was the Soviet Government. This Government maintained a firm opposition to the "capitalist monopoly" and exerted its utmost influence to get foreign shipowners to ignore it. It was so successful that the Black Sea scheme was withdrawn in April, 1936, after a short life of only five months. The Black Sea and U.K. scheme continued, despite some undercutting by Scandinavian owners, but when in November, 1936, the Canadian Government removed the prohibition of anthracite imports from Russia, this half of the scheme had also to be dropped. Russian opposition also wrecked another scheme, commended but not fathered by T.S.A.C., covering the Baltic timber trade. First started in 1935, this scheme had to be discontinued after a few months; and when revived in 1938 it met a similar fate.

In the case of T.S.A.C.'s other schemes foreign co-operation was very good until March, 1939. Foreign shipowners were represented on T.S.A.C., and complaints of evasion were few. In 1938 and 1939, however, business in the River Plate was very bad, owing to the poor grain crops, and as the minimum rate in force was considered fairly high, the loyalty of shipowners was severely strained. It broke in March, 1939, when a batch of Greek fixtures was suddenly reported, at rates believed to be well below the minimum rate. T.S.A.C. immediately responded by reducing the minimum rate by 20 per cent., and the Greek Government kindly passed legislation to compel Greek owners to observe the minimum rates. With the exception of this lapse the schemes held together very well indeed.

T.S.A.C.'s work raised many interesting problems into which we cannot enter here. There was the problem of deciding adequate differentials for large ships and small ships, for whole cargoes and for berth and liner parcel business. Then there was the problem of making sure that on each route all competing ports were included; Newcastle, New South Wales, had to be included in the Australian scheme after twenty months; the control of grain freights from the St. Lawrence was extended from time to time until it included all U.S. eastern ports and the Gulf. There were also minor methods of evasion, such as allowing the charterer to do his own stevedoring, varying the rate for "two-port options", chartering simultaneously a ship on a regulated and a ship on an unregulated route, the latter at less than the ruling market rate, and so on. There is in T.S.A.C.'s experience much material for students of the technique of market control. But we must confine ourselves in this paper to one topic, namely the effect of rates which were controlled on those which were not controlled. T.S.A.C. did not fix minimum rates for all trades; grain freights from the River Plate, from Australia and from North American ports were controlled; the others were left to find their own level in the market. It is interesting and important to know what effect these controlled freights, the most important in the market, had on uncontrolled freights, and to this problem we now turn.

V

We can begin by dismissing two opposite theories. The first is the suggestion that raising freights on some routes must tend to depress freights on the others since boats unable to find cargoes on the regulated routes will crowd into the unregulated and depress freights there. For this to be the case, it must be shown that the volume of trade on the regulated routes would be greater if freights were lower. Shipowners are almost unanimous in the opinion that the elasticity of demand is zero. It may make some difference, as between grain moving from the Plate, Australia, or North America, what relation exists between the freights from those ports. But provided that the proper relationship is maintained, there is little reason to believe that a general fall in grain freights from all ports would have any significant effect on the volume of trade in grain. This contention may seem to be disproved by the events of March, 1939. Throughout 1938 the minimum rate for grain from the Plate was fixed at 25s. Charterers maintained that the rate was too high. They held off chartering, going as it were on strike; and eventually found some Greek ships to undercut the minimum rate. T.S.A.C. was beaten; the rate was forthwith lowered to 20s. and an astonishing amount of chartering occurred. But this does not prove that elasticity of demand was greater than zero. All that happened was a transference of demand in time; in a few weeks business relapsed. Had T.S.A.C. been able to hold out, the charterers would sooner or later have had to give in, and the volume of business done at 25s. would not have differed materially from the volume done at 20s. If this is so, the minimum freights on some routes cannot be said to exercise a depressing influence on other routes, for the number of ships seeking cargo on those routes is not increased.

The other argument postulates that freights on the unregulated routes must come up to the level of freights on the regulated routes since no owner will accept a low rate on an unregulated route when he can get a higher freight on a regulated route. This would be the case if charterers were prepared to take an unlimited number of ships on the regulated routes at the minimum rate. If on the other hand there were no business at all to be done on the regulated routes, owners would have to accept whatever rate they could get on the unregulated routes. The argument that freights must rise all round if some "key" freights are increased by T.S.A.C. is too simple to be accepted, and was in fact belied by the events.

Examination of this argument however points to the correct solution: the effect of the minimum freights depends on the volume of business available on regulated routes. If these routes are able to absorb unlimited tonnage at the minimum freight, freights on other routes must rise to the level of the regulated routes. If no business is doing at the minimum freights, they have no effect. The volume of business is the key to the situation.

The volume of business on the regulated routes is important because it determines how long a ship arriving at a regulated port will have to wait for a cargo. The cost of waiting in the Plate for a cargo was estimated in March, 1938, at about 6d. per ton per week.[1] The minimum rate was 25s. per ton. We can therefore say, as a rough first approximation, that if the owner were offered 16s. for some other journey of equivalent length and cost, he could afford to refuse it if he thought he could get a cargo from the Plate by waiting there less than 18 weeks, but would accept it if he expected a longer wait.

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[1] "A Baltic Broker's Log" in the *Shipping World*, 9th March, 1938.

The Plate is now the principal tramp trade, and long waits there were the rule during 1935, 1936, 1938 and 1939 (1937 was a boom year). At one time there were 70 vessels waiting. From the beginning of the scheme T.S.A.C. found it necessary to restrict sailings to the Plate for fear that a heavy accumulation of tonnage there would cause the scheme to collapse. Vessels were forbidden from March, 1935, to proceed to the Plate in ballast without first having obtained a fixture. This did not stop ships from proceeding with outward cargoes, and such ships accumulated waiting for fixtures. Accordingly in March, 1936, ships were forbidden to sail from the Plate in ballast even if they could first obtain a fixture; the plums were to be reserved for such ships as could get outward cargoes. Tonnage with outward cargoes nevertheless accumulated, so in June, 1936, even ships proceeding outward with cargoes were prohibited from accepting fixtures until such time as T.S.A.C. should determine. These restrictions were gradually relaxed as business improved in the second half of the year, but they had to be reimposed in 1938 and 1939 when the boom of 1937 had ended. Their effect was to compel each ship entering the Plate to take its turn in the queue. Owners could estimate how long they would have to stay in the queue, and calculate accordingly in deciding what minimum rate would be acceptable in unregulated trades. The effect of this principle is clearly marked in the indices of unregulated freights. They fell in the first half of 1935, of 1936 and of 1938 despite the existence of minimum freights elsewhere, and they revived at the end of 1936 and in the second quarter of 1939 when business conditions improved in regulated trades.

A similar principle can be applied to explain the effect of the regulation of homeward rates upon the unregulated outward rates; the longer the ship expects to have to wait for a homeward cargo, the higher the freight it will demand for the outward journey. This was particularly noticeable in the early half of 1938; homeward prospects from the Plate were deteriorating, and the outward rate rose steadily from about 9s. in January to 16s. in March to compensate for the long period of waiting for a homeward cargo. Outward rates were also affected by T.S.A.C.'s restrictions on sailings. In those periods when ships were forbidden to move outwards in ballast, an outward cargo was a

" passport " to the Plate, and outward rates declined ; this happened in March, 1936, and again in November, 1937, when its immediate effect was to reduce the outward rate from 11s. 9d. to 9s. The reverse happened when T.S.A.C. forbade even ships with an outward cargo to fix homeward from the Plate, as in June, 1936, and March, 1938. On the former occasion the rate jumped from 8s. 3d. to 12s., but fell again as the market realised that the restriction only added a little to the probable wait in the Plate. To sum up, the effect of fixing a minimum rate is that outward freights no longer move inversely. The inward rate is pegged. The outward falls if prospects improve, or if restrictions are placed on ballast sailings. It rises if prospects homeward deteriorate, and especially if vessels carrying cargoes are compelled to join a queue for inward cargoes.

Lastly, time charter rates. As these were not fixed by T.S.A.C. there was an obvious loophole for evading the minimum voyage charter rates. From the start it was expected that speculators would hire ships on time charter and re-let them on voyage charter at less than minimum rates ; such speculators, not being shipowners, owed no loyalty to T.S.A.C. Accordingly the Committee ruled shortly after the schemes were inaugurated that shipowners when hiring on time charter must stipulate that the vessel should comply with all the conditions of minimum freight schemes if used on any of the routes to which such schemes applied.

This ruled out speculators, but it did not touch the merchant hiring a ship for his own use. When business prospects were bad, ships could be offered on time charter at the true market rate, which was much below the minimum rate. A clear case occurred in the St. Lawrence trade in November, 1936, and T.S.A.C. met it immediately by ruling that time charters must in future provide that the ship should not be used to carry grain from the St. Lawrence. This provision was however withdrawn in 1937 when conditions improved.

In 1938 the difficulty arose again. Six ships were taken on time charter in May to carry grain from the Argentine. T.S.A.C. then ruled that no ship should be let on time charter for any period commencing with the voyage homeward from the Argentine. This provision was subsequently extended to the other regulated routes as well. It was, however, not sufficient since it could be evaded by starting the time charter with an outward voyage. A ruling in July expressed the vain hope that ships would not be let on time charter at a rate less than the equivalent minimum voyage rate. Finally, in February, 1939, T.S.A.C. was driven to rule that every time charter must contain a provision prohibiting the ship from loading in the Argentine. The time charter rate reflected the true market position. If the voyage rate was to be fixed, T.S.A.C. had either to fix the time charter rate as well, or to banish time-chartered ships from the regulated routes. It chose the latter course.

VI

It may be thought that T.S.A.C. might have made its control of freights more effective by fixing not just some rates but all of them. The difficulties in the way of doing this were enormous. Even the limited control produced its problems. Thus, tonnage accumulated abnormally in the Plate during 1938 and early 1939 because the minimum rate there was too high relatively to the minimum rates elsewhere and to the unregulated rates. A simple ruling that the rate on each route was to be the equivalent of *xd.* per ton per day would have overcome this sort of difficulty, but not others. As we have seen in the first part of this paper, there is no simple relationship between the various rates. Time charter rates for short periods are sometimes above and sometimes below rates for longer periods ; and in addition the rate for each ship is different, depending on its speed, fuel consumption, etc.[1] Inward and outward rates move sometimes together and sometimes inversely. Rates on different routes must fluctuate in different degrees because of differences in costs. Doubtless it would not be beyond human ingenuity to vary the relations between minimum rates week by week so as to take account of the changing conditions which require rates to diverge from each other. But the task would call for a more extensive machinery and more intimate knowledge of fluctuating conditions than is normally to be expected. Even as it was, T.S.A.C., though controlling only a limited number of rates, had to appeal from time to time for detailed returns from shipowners on which to base its decisions. Complete freight control is a gigantic task if the proper inter-relations of freights are not to be disregarded.

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[1] Wartime requisitioning of ships on time charter illustrates the objection to fixing a uniform time charter rate. The fixed rate of hire for requisitioned ships at present in force does no justice to the more modern, economical, well equipped vessel.

Finally, it is on the divergencies of some rates from other rates that the world depends for a proper distribution of ships in the different parts of the globe. If cargoes at *A* increase, the rate there rises and ships are attracted; if cargoes diminish the rate falls and ships are encouraged to move elsewhere. If rates are all fixed this mechanism for controlling the flow of shipping ceases to function, and must be replaced by some authoritarian method of getting the right ships in the right places at the right times. This can be seen with inland transport. Railway rates are more or less stable. An increase in traffic from *A* is not accompanied by an increased rate attracting more trains. But since the railway company is under a statutory obligation to carry all traffic offered to it, the additional trains are secured without any change in the rate. If shipping freights are to be stabilised, there must be some such law, and an authority capable of enforcing it. And since shipping is international, it would have to be an international law, administered by an international body with full powers to order ships hither and thither.

T.S.A.C. avoided these problems by fixing a limited number of rates and leaving the others to adjust themselves in the market. Within this limited field it was eminently successful. It prevented the subsidy from being "dissipated" in the regulated trades, and though it probably had little effect on its dissipation in unregulated trades, or on the level of rates there while conditions were at their worst, it certainly maintained rates in some of the principal tramp trades, and hastened the rise of rates elsewhere when business prospects improved. Shipowners have certain cause to be grateful to it. Whether the consuming public should be equally grateful is a matter into which it is no purpose of this paper to enter.

The Age of Tyrannies

By ELIE HALÉVY

(Translated by MAY WALLAS)

[The following article, published in 1938 in Elie Halévy's posthumous volume of essays, *L'Ere des Tyrannies*, consists of his contributions to a debate held at the *Société française de Philosophie* on November 8th, 1936, preceded by a short paper which he had submitted to the members of the Society as a basis for discussion.

In publishing this translation of an article which has already appeared elsewhere, the Editors of ECONOMICA depart somewhat from their usual practice and perhaps also go slightly beyond the field normally covered by ECONOMICA. The intrinsic importance of the article would probably be sufficient to justify this exception. The problems with which it deals lie on the border line between economics and politics and the author has raised in it, at an early date, questions which have been considered more recently in this journal from the point of view of the economist. It seemed desirable to make the article accessible to wider circles in this country than a French book, published shortly before the outbreak of war, would be likely to reach. And the Editors of ECONOMICA are glad in this way to pay a tribute to the memory of a great Frenchman, a student and lover of this country, and an old friend of the London School of Economics.]

SOCIALISM has always suffered from a fundamental inconsistency, which goes back to its origins at the beginning of the nineteenth century. We are often told by its supporters that it is the outcome and the logical conclusion of the liberal Revolution of 1789. Socialism, it is claimed, means the release of labour from the domination of capital, that is to say the liberation of mankind from the last constraint which remained after all the others had been destroyed. And yet it is also a reaction against Liberalism and individualism, since it proposes to enforce a new form of organisation, in place of the decaying organisations which were overthrown by the French Revolution. For it should be noted:

(1) That Socialism, in its original form, is neither liberal nor democratic, but stands for an organised and hierarchical society. This is especially true of Saint-Simonian Socialism.

(2) That the socialist Revolution of 1848 led in the end to the dictatorship of 1851, which was strongly influenced by Saint-Simonian theory. The Second Empire was both a reaction against "socialist anarchy" and a further development of that principle of organisation which is an inherent part of Socialism.

(3) That German Social Democracy was founded not only by Karl Marx but also by Ferdinand Lassalle. Whereas Marx, the creator of the Socialist International, looked forward to a society based on anarchy as well as on communism as the final stage in human evolution, Lassalle, who was a nationalist as well as a socialist, exercised a direct influence on the " social monarchy " of Bismarck.

I believe that these observations are confirmed, in the most striking manner, by the whole evolution of European society since the outbreak of the Great War and the opening of the period which I propose to call the " age of tyrannies ".

The age of tyrannies dates from the month of August, 1914, that is to say from the time when the belligerent nations first adopted a form of social organisation which may be defined as follows:

(1) In the economic sphere, the nationalisation, on a vast scale, of all the means of production, distribution and exchange; and at the same time an appeal by the Governments to the leaders of the trade unions for support in carrying out this policy. State Socialism, therefore, is combined with syndicalist and " corporative " elements.

(2) In the intellectual sphere, the " nationalisation of ideas " in two different forms, one negative, that is to say the suppression of all expressions of opinion which were thought to be opposed to the national interest, and the other positive. I shall call the positive aspect " the organisation of enthusiasm."

The whole of post-war Socialism is derived from this war-time organisation far more than from Marxism. The policy which it offers to men who have often been drawn to it by their distaste for and hatred of war is the continuation of war-time organisation in time of peace. That is the paradox of post-war Socialism.

Russian Bolshevism, in its early stages, developed on the lines which I have just described. The Russian Revolution began as a revolt against war. It was then consolidated and organised in the form of " war-time communism ", during the two years of fighting against the Allies which opened with the Peace of Brest-Litovsk and ended with the final victory of the communist forces in 1920. And here a new factor comes into play, which I have not yet mentioned in my analysis. Because of the collapse of all government, and the complete disappearance of the State, a group of armed men, inspired by a common faith, decreed that they were themselves the State. Bolshevism in this form is literally Fascism. It is true that, in Central Europe, Fascism, which was a direct imitation of Russian methods of government, was also a reaction against socialist anarchy. But it created in the end, under the name of the corporative State, a kind of counter-Socialism, which I am inclined to take more seriously than is usually done in anti-fascist circles, and which consists of an increasing degree of state control over economic life, with the support of certain working-class elements.

I shall, therefore, define as follows the fundamental contradiction from which European society is now suffering. The conservative parties are demanding that the power of the State should be increased to an almost indefinite extent, and that its economic functions should be correspondingly diminished. The socialist parties are asking that the functions of the State should be indefinitely extended, and that its authority should be indefinitely diminished. "National Socialism" is a compromise between these two points of view.

What chance have these new systems of government of spreading to other countries in the future? How likely is it that they will break up from within? And above all have I given a true explanation of their origin, when I ascribed it to the fundamental inconsistency of Socialism itself? These are the questions which I submit for your consideration.

Report of the Debate

The Chairman (M. Léon Brunschvicg): Gentlemen, our meeting to-day is a continuation of a discussion organised by M. Xavier Léon on March 29th, 1902. The subject was "The materialist conception of history", the discussion was led by Elie Halévy, and the speaker was Georges Sorel. Many things have happened since then; and the work of the author of *Les Illusions du Progrès* and *Réflexions sur la Violence* is not without its bearing on recent history.

M. Elie Halévy: We are, if you will, carrying on the discussion which began in 1902. But the subject which I am asking you to consider is very different from the one which the Society had before it on that occasion. We shall have much to say to-day, as we had then, of Marx and Marxism. But the point of view has altered. In 1902 we were, as M. Brunschvicg was saying, discussing the materialist conception of history, that is to say a certain philosophical interpretation of history, which has no necessary connection with the socialist interpretation. We are concerned to-day with the nature and destiny, not only of Marxism, but of Socialism itself, and with its influence on the future of mankind. I mean to speak shortly, so as to leave as much time as possible for discussion, and with the Chairman's permission, I will ask other speakers to follow my example. I shall not repeat, and shall certainly not add anything to the printed text which has been sent to all members of the Society.

I propose to open the debate with a few personal reminiscences, not because I feel that my own experience is especially important, but because I should like other speakers to follow my example. The vast problem which we are discussing cannot fail to stir the emotions, or at least to disturb the consciences, of all who are present at this meeting; and I believe that we may shed some light on it by comparing our personal experiences.

May I remind you then that a few months before the meeting in March, 1902, to which M. Brunschvicg has referred I had begun to give my first course of lectures on the History of Socialism at the *Ecole des Sciences politiques*? I have lectured on that subject once in every two years since November, 1901, so that I feel myself qualified to speak of Socialism, not as a politician, but as a historian. Max Lazard, whom I see here, and who is no longer a very young man, attended my course of lectures thirty years ago. What then was my own attitude to Socialism when I first undertook to lecture on it? I will tell you as far as I can remember. I was not a socialist. I was a liberal in the sense that I was an anti-clerical, a democrat and a republican—or, to use a word which had many and significant associations at that date, a Dreyfusard. But I repeat that I was not a socialist, and I am sure that the real reason was one which does me no particular credit. I was born five or six years too soon. I was a student at the *Ecole Normale* from the autumn of 1889 to the summer of 1892, that is from the fall of Boulanger to the beginning of the Panama crisis. It was an interval of unbroken calm; and during my three years there I did not know a single socialist. If I had been five years younger, if I had spent the years between 1895 and 1900 at the *Ecole Normale*, and had been a fellow-student of Mathiez and Péguy and Albert Thomas, it is extremely likely that I should have been a socialist at twenty-one, though it is impossible to tell what my intellectual development would have been in the years that followed. When we apply the methods of historical research to our own lives, and are led to examine the reasons for our convictions, we often find that they are in fact the result of accident, and depend on circumstances over which we had no control. It is a discovery which may well make us more tolerant, for when we have learnt to understand the origins of our beliefs we begin to wonder whether it is worth while for men to slaughter each other for such frail and uncertain things.

But though I was not a socialist I had already a fairly thorough knowledge of Socialism, derived from what I had been able to observe in France and also from my English experience. At that time I had been making long and frequent visits to England over a period of three or four years, and I had already made friends with two outstanding personalities, Mr. and Mrs. Sidney Webb, the creators of the Fabian Society. I am still their friend, and to-day I feel as if we were contemporaries, but in those days the ten years difference in age meant a great deal. I was a young man of twenty-five or thirty talking with two older people who were about thirty-five or forty years old, and who had already written two books which are still classics, and I listened with respect when they expounded the principles of their Socialism. It was profoundly anti-liberal. They did not hate the tories, indeed they were extraordinarily lenient to them, but they had no mercy for Gladstonian Liberalism. It was the time of the Boer War and both the advanced liberals and the men who were beginning to form the organised Labour Party had generously sided with the Boers against British Imperialism, in the name of freedom and humanity. But the two Webbs and their friend, Bernard Shaw, stood apart. They were ostentatiously imperialistic. The independence of small nations might mean something to a liberal individualist; it meant nothing to collectivists like themselves. I can still hear Sidney Webb explaining to me that the future belonged to the great administrative nations, where the officials govern and the police keep order. Perhaps it is their fault that I have always been struck by the illiberal elements in the socialist ideal. It is the second accident in my intellectual development, and you should remember it if you want to understand the origin and nature of my prejudices. It happened then that in my lectures on the History of Socialism I was led to emphasize some of the conservative aspects of nineteenth-century Socialism in Europe, to speak for instance of the authoritarian and monarchical and Christian forms of Socialism, of the influence of Lassalle on Bismarck and of the Saint-Simonians on Napoleon III. I shall not labour the point: I refer you to the text of my paper.

About 1910, however, I was disturbed to find that as far as England was concerned the Webbs seemed to have been mistaken, and that their mistake had led me astray. Not only had there been an important reaction in favour of Liberalism, which they had failed to foresee, but the new Liberalism was strongly influenced by Socialism, and what we should now call " the Lloyd George experiment " had proved that there was such a thing as socialistic radicalism and that it was very much alive. In short, the reconciliation between Socialism and Liberalism, which the Webbs believed to be impossible, was actually taking place.

But the War came, and after the War what I have called the " age of tyrannies " began. The Webbs and Bernard Shaw have not been false to the convictions of their youth. They believe that they have been confirmed by events; and their sympathies are divided between Russian Bolshevism and Italian Fascism.

I have told you all this, not to justify my position, but to explain it. I have spoken, not as a political theorist, but as a historian. It is also as a historian—a philosophic historian, if you will—that I have sought to define the age of tyrannies. I have kept the argument as far as possible above the level of politics, and I hope that you will follow my example. Do you, in the first place, after reading my statement, agree that the historical phenomenon which is the subject of it is a reality? And secondly do you believe that I have given a valid explanation of it? I await your comments.

The discussion which followed was opened by M. Max Lazard, in a speech criticising M. Halévy for having approached the study of concrete social phenomena " not directly, but only as they are reflected in certain social theories ".

M. Elie Halévy: M. Max Lazard has made some very interesting remarks, which are concerned with a question of intellectual method, and which it is difficult to answer without preparation. I will give you, however, the first observations which occurred to me when I was listening to his speech. I am not disposed to deny, as categorically as he appeared to do, the influence of ideas on history, and more directly on the men who play an important part in history.

Two examples, which I gave in my paper, and which were referred to by M. Lazard, will, I think, help to make my meaning clear to you. Let us consider first the case of Napoleon III. I agree that Morny, the man who was really responsible for the *coup d'état* of 1851, believed that it was the outcome of the political necessities of the moment and not of any theoretical considerations. I would point out, however, that Morny was acting on behalf of the Prince President himself, who was the author of a pamphlet called *Idées Napoléoniennes*, published in 1838, and inspired by the theories of Saint-Simon. The influence of Bazard and Enfantin on Napoleon's mind is a historical fact, and it is also a fact that he surrounded himself with advisers who had once been Saint-Simonians. He was always obsessed by the idea that he himself was a Saint-Simonian on the throne of France.

The case of Bismarck is very similar, though there are important differences. It is essential to remember that, from 1861 to 1864, a man who played a strange part in the history of European Socialism was working side by side with Bismarck. I mean Ferdinand Lassalle. At all the social democratic congresses held before the war of 1914 two busts always presided over the meetings—Karl Marx, and beside him, as was only right, Lassalle. For while Marx gave the party its doctrine, Lassalle was the first man in Germany, the first in Europe, who succeeded in organising a party of socialist action. Nevertheless, if he had not unfortunately been born a Jew, Lassalle could also be hailed as a forerunner in the vast halls where National Socialism is acclaimed to-day. When he was founding the worker's *Verein*, in the critical years immediately after Bismarck came to power, he certainly said many strange and disturbing things. He bitterly attacked, not Bismarck, but the progressives who were fighting Bismarck. We find him appealing for help to the police against a Bürgermeister who tried to prevent him from speaking; and when he was prosecuted for his opinions, he made an eloquent appeal to his judges, claiming that he was on their side against modern barbarism—that is to say against Liberalism. We know that he often corresponded with Bismarck, and that he had secret interviews with him. When in 1866 Bismarck founded the Confederation of Northern Germany on a basis of universal suffrage, he was acting on advice which came to him directly from Lassalle. And I am convinced that after 1878, when he began to practise "State Socialism" and "Christian Socialism" and "Monarchical Socialism", he had not forgotten what he had learnt from the socialist leader. This does not mean that Bismarck was in any sense a doctrinaire. He was a purely opportunist statesman, obsessed by one desire—to create, strengthen and consolidate the unity of the German Empire. For this purpose he was prepared to make use of all parties and all political theories in turn. Among the theories which he made use of was the Socialism of Lassalle.

I have now given you two examples where ideas and events are obviously interconnected, and where the historian who neglected the history of ideas would be making a serious mistake. Apart from this I have no quarrel with M. Lazard's main argument. Far be it from me to reduce the whole of History to the history of ideas. May I, in order to make my meaning clear, refer once more to my personal experience? In the far-off days when Max Lazard was my pupil, I was new to the teaching profession. It is very likely that the lectures which he attended dealt exclusively with the history of ideas, because the study of political theory was for me the easiest approach to the history of Socialism. But thirty years later Max Lazard's son was my pupil in his turn, and if the father looks at his son's note-books, he will see that as I became more experienced I lectured less on the history of ideas and more on History. I do not mean that I am sorry that my first approach to Socialism was through the history of ideas. I am still glad that it was so. For as M. Lazard very rightly observed, theories simplify facts and make them fit into an ordered scheme. And I believe that this ordered arrangement is of the greatest value for the understanding of the facts themselves. Why was the Marxian theory so successful? Because it expresses better than any other theory certain important characteristics of economic evolution, and satisfies some of the deepest needs of the masses.

Can we deny that such a theory is of use to the historian, in so far as it helps him to understand both these things? I believe, therefore, that it is very easy to translate the ideological language that I used into sociological terms, without affecting the logic of my argument, or modifying it in any way. For example, the first paragraph of my paper might be paraphrased as follows:

" The working-class movement has always suffered from a fundamental inconsistency. On the one hand, it may be considered as a movement of liberation, a revolt against the factory system and the subjection of labour to capital. But on the other hand, the workers, in their revolt against oppression, are obliged for their own protection to try and discover a new form of compulsory organisation, to replace the decaying organisations which were overthrown by revolutionary Liberalism."

Does not this meet all M. Lazard's objections without affecting my argument? Moreover, as he himself admitted, one of the main points which I raised was the importance, for the understanding of recent developments in the history of the civilised world, of a historical fact which has nothing to do with theories—I mean the Great War of 1914. I am even sorry, on re-reading what I have written, that I did not stress as much as I should have done the connection between the social consequences of that great event and the evolution of Socialism. I should like, if I may, to explain more clearly the connecting link between the two points which I emphasized in the first part of my paper. I should say then, if I rewrote it, that the State ownership of the means of production, distribution and exchange which the pre-war socialists demanded was to a large extent brought into existence by the War, for reasons which the socialists had not foreseen. Moreover, if we go back to an earlier period, about a quarter of a century before the War, we find that the whole socialist programme—or if you prefer it the " guesdiste " programme—was simply a demand for the State ownership of all the main industries, beginning with the railways, as though nationalisation in itself was the solution of the whole social question. But in 1914 syndicalism had already existed for many years, and its supporters were too suspicious of the State to accept this solution. They demanded the " syndicalisation " of the whole of industry without any intervention by the State, and the absorption of all forms of bureaucracy into the new syndicalist organisation. In other words, they were aiming at the abolition of the State. But meanwhile the English, who are moderate people even in Utopia, were working out a theory which was a compromise between the extreme syndicalism of the French and Italians and Spaniards, and some form of State Socialism. What are the legitimate functions of the democratic State on the one hand, and of the professional associations and trade unions on the other ? It was such questions as this which the people who were known as Guild Socialists used to discuss among themselves. Now immediately after the War, and as a result of the War, we find (I am quoting the text of my paper) " an appeal by the Governments to the leaders of the trade unions for support in carrying out " a policy of State ownership, so that " syndicalist and corporative elements " are combined with State Socialism. Later, when the War was over, large numbers of people in all the belligerent countries began to work out schemes of industrial organisation, in which the experience of the war years was drawn on for the benefit of Socialism. And although, outside England, the authors of these schemes had never even heard of Guild Socialism, they often seemed to be applying Guild Socialist principles.

Let us now turn to the point which M. Lazard raised at the end of his speech. How long, he asked, are the tyrannies of the present day likely to endure ? I had originally devoted a whole paragraph to this question, of which I omitted all but the closing sentences of my paper. I did so on the advice of our Chairman, who asked me to omit it for two different and contradictory reasons. The first was that I must leave myself something to say in this debate ; the second, that if the debate developed on those lines it might degenerate into a political discussion. I yielded to the second of these arguments ; but I ask nothing better than to say a few words in answer to M. Lazard's remarks, and to express my agreement with him. When I look at the future from the point of view of all those who love peace and freedom, I am inclined to be even more pessimistic than he is. The idea of a European Federation has very little life in it. M. Lazard seemed for a moment to be looking forward to a time when some new form of imperialism would embrace the whole of Europe, and bring us peace without freedom. That hope appears to me completely unreal at the present time.

I can think of only one tyranny where such a universal outlook exists. From that Government alone M. Lazard might hope for the establishment of peace without freedom. But does he really hope that this will happen? The tyrannies which touch us more nearly, and which rule from Rome and Berlin, are narrowly nationalistic. They promise nothing but war. If war breaks out the democracies will be in a tragic dilemma. Can they remain parliamentary, liberal democracies if they mean to wage war efficiently? My contention, which I shall not weary you by repeating, is that they cannot do so. When war returns it will consolidate the idea of tyranny throughout Europe.

The debate continued. M. C. Bouglé discussed the failure of the 1848 Revolution, which he was less inclined than M. Halévy to ascribe to " a reaction against socialist anarchy ". He spoke of the democratic Socialism of Louis Blanc as the first attempt to ensure the advance of political and intellectual Liberalism, even at the sacrifice of economic Liberalism.

M. Elie Halévy : It is impossible to deal adequately with these questions in a single afternoon, or rather the last part of an afternoon. But I will try to answer M. Bouglé's points as shortly as I can. He criticises my use of the words " a reaction against socialist anarchy " in my analysis of the *coup d'état* of 1851. He is right, for the words failed to express my meaning. I ought to have written " a reaction against the *fear* of anarchy ". But surely the psychological significance is the same.

It is a curious fact that very much the same thing happened in Italy before the March on Rome. In 1920, the year of the occupation of the factories, a state of anarchy existed, and it was at that time that Giolitti gave arms to Mussolini and his fascists to maintain order in the country, because he could not trust the army. But when Mussolini seized power there had been no disorder for two years, and this was partly his own doing. He was swept into power by the memories of the fear which had existed in 1920, and by the feeling which still persisted that the parties which stood for order and discipline were in fact incapable of maintaining order by parliamentary methods.

This helps us to understand what happened in 1851. At that date the state of anarchy had come to an end—except perhaps in Parliament. But the extremists in the Legislative Assembly were still turbulent, and could still frighten people who had not forgotten 1848 and 1793; and the reactionary majority who opposed them were incapable of agreeing on the form of the new government. And so the masses threw themselves into the arms of the men who stood for order, but not for reaction, in the sense in which the Legitimists and the Orleanists in the Chamber were accused of being reactionaries. We must not forget that on the very day when Napoleon abolished the Constitution he re-established universal suffrage, which had been seriously curtailed by the Assembly. Nor must we forget that when Guizot heard the news of the *coup d'état* he exclaimed : " This is the triumph of Socialism ". In one sense it was an absurd saying, and yet it sums up for us the feelings of the middle classes towards a government which was not of their making and whose aims were not their aims.

Now as regards my definition of Bolshevism as a form of Fascism I agree with M. Bouglé's remarks. But I do not think that on this point my words failed to express my meaning. I wrote that : " because of the collapse of all government, and the complete disappearance of the State, a group of armed men, inspired by a common faith, decreed that they were themselves the State. Bolshevism *in this form* is literally Fascism ". I expressly said that it was a question of the form of government, of which Bolshevism, with the dictatorship of the communist party, was the originator. But although Italian Fascism imitated and did not originate, I consider that the word " Fascism " best describes the characteristics which are common to the two systems. " *Fascio* " is an old Italian word, which means a group of men armed for guerilla warfare. In Italy, after 1870, at the time of the First International, there were *fasci operai*, inspired by the anarchism of Bakunin ; and such groups still exist in Spain, where we may watch them in action at the present time. When Mussolini seized power, he did so by using other *fasci*—the *fasci di combattimento*—in the service of a different ideal.

M. Bouglé argued that there could be a democratic form of Socialism, combining political and intellectual Liberalism with authoritarianism in the economic sphere. I should not like to deny that such a thing is theoretically possible. But I am afraid that he weakened the force of his argument when he referred us to the example of Louis Blanc. I should like to remind him (he knows Proudhon better than I do) of the violent and concerted attacks on Blanc's ideas which were made after 1848 by Proudhon and Michelet. Proudhon called himself—perhaps wrongly—a socialist ; Michelet was a republican and not a socialist. These men denounced Louis Blanc for his praise of the Terror and of the Committee of Public Safety—for idolizing Robespierre, the pure Rousseauist, as against the republicans, the offspring of Voltairean liberalism, whom he accused of leading France to the dictatorship of the Empire and the clergy. Has the event proved that Proudhon and Michelet were wrong? Nor can I overlook the fact that the very origins of democracy are suspect, since they go back to the Jacobins, whose government was a dictatorship. Is not the Marxian doctrine of the dictatorship of the proletariat directly descended from the theories of Baboeuf, who was the last surviving disciple of Robespierre? Was not Karl Marx, when he was in Paris before 1848, directly influenced by Blanqui, who revived the Socialism of Baboeuf?

I see that some of you would like to protest, to remind me perhaps, of the Marxian formula that the ideal of Socialism is to set up "administration of things, in place of government of persons". That was a new version of the old Saint-Simonian belief that when the military system has been succeeded by the industrial system, "government" will cease to exist and will be replaced by "administration". Well and good; but the doctrine of Marx is also the doctrine of Lenin. I have here a letter from M. Salzi, protesting against my statement that Marx "looked forward to a society based on anarchy as well as on communism as the final stage in human evolution". "Nothing," he says, "could be further from the truth. I can find nothing in Marx which could justify any kind of anarchy. Think of the Russians, who have put Marxism into practice with scrupulous and ruthless accuracy". And he refers me to André Gide.

Alas! that is the whole tragedy. I still believe that my analysis was perfectly correct. But all socialist governments, when they take office, are forced to explain by elaborate and far-fetched arguments how men who profess to be orthodox socialists are to act when they have to govern a non-socialist community. It is at this point that they resort to Marxian formulæ.

For the Marxist any State is by definition an instrument of class oppression. Up to the present and ever since the advent of capitalism, it has been the means by which the bourgeoisie oppressed the proletariat. But in order to prepare for and hasten the coming of a society where class and therefore government shall have ceased to exist, it is necessary to pass through an intermediary period when the State will be the instrument by which the working class oppresses the bourgeoisie, until the time comes to abolish it altogether. Does this mean simply a period of unconstitutional government ? The phrase has many meanings. Karl Marx certainly did not foresee anything as ruthless as the Soviet system ; and if it were simply a question of granting special powers to a government for a few months—such as were granted to Poincaré in financial matters—the unconstitutional action would be harmless enough. But if the legal constitution of a country is to be suspended for several decades—or, indeed, for several centuries—I no longer feel any interest in the state of anarchy which we are told is to succeed it. What interests me is the present and the immediate future—beyond that is what Jules Romains calls the " ultra-future ". And is it not also true that the Nazi factions in Germany hold that their system has its own permanent value, and that it is the opening of a new era which is to endure for ever ?

The debate was continued by several speakers, among them M. Maublanc, who defended Marxism against M. Halévy's accusation of ' tyranny ', and protested against his identification of the Soviet system with the fascist and Nazi dictatorships.

M. Elie Halévy : The time has come for me to close this debate. I am sorry, for it is really an impossible task. To satisfy everyone I should have to discuss the whole of Marxian theory in answer to M. Maublanc, and the whole history of the human race since the empire of Tamburlaine in answer to M. René Berthelot. I should have to go outside Europe and say something about Roosevelt's New Deal. I am indeed sorry that nothing more has been said about that experiment, for Roosevelt has attempted to create something very like the corporative State of the Italian fascists, but without suppressing political liberty.

Shall I, in answer to M. Drouin, attempt to prophesy future events ? Neither M. Lazard nor I evaded this question during the debate. We both felt—unlike M. René Berthelot—that our only hope for the future lay in the possibility of a long period of peace, and a relaxation of tyranny in the dictatorships, since it is impossible for a tyrannical government to keep the population permanently on a war footing without going to war. But can it be said that the very existence of these tyrannies is favourable to the maintenance of peace ? And if war comes again and the democracies are forced, in order to save themselves from destruction, to adopt totalitarian methods, will not tyranny as a form of government become stronger and more widespread than it is to-day ?

Shall I add that some speakers, who believed that they were criticising my thought, were perhaps only criticising faults of exposition ? I am thinking of M. Maublanc and his defence of Marxism. He attacked my description of Marxism as " the release of labour from the domination of capital " and " the liberation of mankind from the last constraint which remained after all the others had been destroyed ". But when he himself says that this final liberation is " the true one without which all other freedom is an illusion ", is not his argument very like my own ? It is quite true that according to Marx the classless society will finally come into existence when the liberation of labour from capital is accomplished. It was in this sense that I spoke of " the final stage in human evolution ". I agree with M. Maublanc that the evolution of mankind would certainly continue in the classless society. But he must admit that we cannot foresee the forms which it will take in such a society, since it will no longer be possible to say that the history of the human race is the history of the class struggle.

I shall not dwell further on these points of detail. I have been wondering whether there is not some essential point, raised by several of the speakers in this debate, which I should do well to take as the subject of my closing remarks, and I believe that I have found it. Surely the main question is whether the Russian tyranny on the one hand, and the Italian and German tyrannies on the other, are fundamentally identical or fundamentally different phenomena ? I should be the last to deny that there are many and obvious differences. I have been to Leningrad and I know fascist Italy. Now when one crosses the Russian frontier one feels immediately that one is entering a new world, and it may be argued that such a complete change of values justifies the most extreme forms of tyranny. But in Italy nothing of the kind happens, and the traveller begins to wonder whether such a vast police organisation is really necessary, if its only results are better roads and more punctual trains.

And yet, as I think every speaker has admitted, the two systems are identical in form. In both cases the country is governed by an armed sect, which claims to rule in the interests of the community, and which is able to impose its will because all its members are inspired by a common faith. But that is not all. The theory of Russian communism is valid for the whole human race and implies the abolition of nations as well as the abolition of class. Meanwhile the communists have seized power in one country only, and they have gradually abandoned the attempt to spread world revolution by propaganda or example. They are therefore forced by the necessities of their own existence to raise a bulwark of military power against the threat of foreign armies. They have reverted by the force of circumstances to a kind of patriotism which is territorial as well as ideological, and which even from the ideological point of view begins to look very like the nationalism of the German and Italian tyrannies. At first the State was supposed to be a temporary evil, because its sole purpose was to bring about its own abolition and to ensure the greatest happiness of the greatest number. But little by little the communists began to practise a new and not ignoble ethic of heroic sacrifice, and the individual was called on to endure suffering and do great things in the service of the State. This state of mind is far removed from the hedonism which looks forward to the remote future. I can only call it warlike.

Now it is clear that in the countries which are usually called fascist, in Italy and in Germany, there is no question of the abolition of class. The avowed object of the parties who hold power is the defence of a society based on class distinctions. But I believe that I was right when I said that in both Italy and Germany there has arisen " under the name of the corporative State, a kind of counter-socialism which I am inclined to take more seriously than is usually done in anti-fascist circles ".

We are told that in the dictator countries wages are very low, lower than in many of the democracies. I believe that this is probably true. But surely, in estimating the total wages of the working classes, we have to take into account all the benefits which are indirectly conferred on them by the social services which make up what is called the *Dopolavoro*—free railway journeys, holiday homes, and many different kinds of recreation. I know that all these social services have an underlying political purpose ; the government keeps the workers occupied during their hours of leisure to remove them from the influence of revolutionary agitators; as I said at the beginning of this discussion, "it organises their enthusiasm" and directs it into safe channels. But when all is said this whole organisation does mean a rise in wages, and costs the State a great deal of money.

Where then does the State find the necessary money? My answer is one which was current some ten years ago, and which deeply shocked the conservative press. "The State can only take money from the people who have it." The well-off classes have to bear a crushing burden of taxation. I do not deny that the systems I have been describing are beneficial to big business. But it is not the same thing as the old free capitalism of nineteenth-century Manchester. Even so the captains of industry would rather have a fascist than a communist economy. They are still at the head of affairs; but they are no longer the masters; they have become highly-paid officials. And the huge sums which they may receive every year are of the nature of salaries rather than profits.

In short, on the one hand, we find that a system which began by being purely socialist is developing into a kind of nationalism. And on the other a system which began by being purely nationalist is becoming a kind of Socialism. That is all that I have to say to you.

Development of Industrial Production in the U.S.S.R.[1]

By A. Baykov

The special conditions under which industrial production takes place in the U.S.S.R. may be very briefly recapitulated.

(1) The State owns the means of production. The State budget finances the capital construction of new plants. The "profits" of industrial undertakings go to the State. By redistributing these "profits" between different plants, and by State subsidisation, it is possible to continue production in "uneconomic" plants.

(2) The State monopolises foreign trade. This completely prevents world prices from influencing internal prices. The Soviet rouble is not quoted on foreign stock exchanges and cannot be exported or imported.

(3) All prices with the exception of those of the Kolkhoz market[2] are fixed by the State planning organ. For many products the fixed prices exceed costs of production: the difference goes to the State budget in "profit" or turnover tax. For certain industrial goods, on the other hand, the price may be fixed even below cost and the loss covered by subsidy from the State budget.[3]

These special conditions are the cause at once of the positive and negative aspects of the development of industrial production in the U.S.S.R.

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[1] This paper is a shortened version of a MS. prepared by the author for the National Institute of Economic and Social Research. The author is greatly indebted to the National Institute and to the Dean and Staff of the Faculty of Commerce of Birmingham University for making it possible for him to continue his research work.

[2] On the Kolkhoz market are sold agricultural products by the Kolkhoz farms and farmers after delivery of their obligatory quota to the State. On the Kolkhoz market, producer and consumer meet directly without the intervention of middlemen. All other prices of agricultural products are strictly regulated by the State and the State is able to appropriate the major part of marketable products at a low price and sell them to the population at a higher price, and the difference is accumulated by means of a turnover tax in the State budget. This income from trade in agricultural products is the chief source for financing the development of industry.

[3] This was practised in many branches of heavy industry during the first and second five-year plan.

Without foreign loans, but due to the organisation of the internal accumulation of capital, in a comparatively short space of time (two five-year plans) there has been achieved:

(1) Very considerable capital construction and reconstruction of industry.[1]

(2) The inauguration of quite new branches of industrial production, such as machinery, chemicals and armaments.

(3) A yearly increase in the productive capacity, industrial production and quantity of employed labour in industry. (See Statistical Data in Appendix 1.)

(4) The beginning of a more rational geographical distribution of industry, and a more complex development of economic possibilities of different regions of the U.S.S.R. (See Statistical Data in Appendix 2.)

(5) The training of a large number of engineers, technical personnel and skilled workers.[2]

The negative results of the development of Soviet industry during the whole past period comprise:

(1) DEFECTS OF PLANNING.

The planning of capital investment and development of industrial production was often exaggerated and unco-ordinated. This resulted in a disproportion between capital building and industrial production. This disproportion in capital construction involves a considerable amount of frozen capital, a tension in production of one branch and at the same time an un-economical utilisation of production capacity in another.[3]

The rigidity of the planned task has forced the directors of the factories to carry out the plan according to the letter of the law. The plan was often accomplished at the expense of selection of goods, at the expense of specialisation and quality, and resulted in a high percentage of spoilt goods. The rigidity in the task of production and the fulfilment of the unco-ordinated task also forced the directors of the factories to accumulate "re-insurance" stocks of equipment, half-manufactured goods, raw materials, etc. (in case the supply of these materials should be delayed due to another factory not having succeeded in fulfilling the plan).

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[1] More than 80 per cent. of the whole industrial production of 1937 was produced by new and completely re-constructed plants.

[2] In 1932, 7,999,800 persons were employed in industry; in 1937, 10,111,700. In 1933, 6,100 engineers and architects graduated from the University; in 1938, 25,400.

[3] For example, *Dneiprostroi* was planned as a combine for the supply of many factories. The hydro-power station was, however, built before the factories which it was intended to supply.

This resulted in frozen productive and circulating capital and was reflected in the rise in the cost of production.

The plan was often delayed in preparation and in communication to the factories, which involved serious complications in the current work of the factories.

(2) DEFECTS IN DIRECTION AND MANAGEMENT.

The centralisation of the direction of all industry results in a formal management and control of the work, which is both inelastic and elusive. During the whole period of the Soviet system there have been many changes in the principles underlying the direction of industry, and many changes in methods of direction, as well as in the central apparatus and management itself.

Further reorganisation of the central organ which directs industry has been undertaken during the current year. Up to now, no definite satisfactory solution has been found to the problem of centralisation of direction, and de-centralisation and concrete management of industrial enterprises. A considerable bureaucracy still exists in the direction and management of industry. The number of staff employed in administration is very considerable when compared with the amount of labour employed in production. Overhead expenses are still very high.

(3) UNECONOMIC CAPITAL CONSTRUCTION AND PRODUCTION.

Capital construction is often carried out at considerable over-expense, both material and financial, and is often delayed. Very often construction of the different parts of a plant is not co-ordinated, resulting in an inevitable hold-up in exploitation.

Among those directing industrial enterprises, a marked " dependence " psychology has been developed, due to the following causes :

Industrial enterprises produce goods not for the market but to fulfil the plan of production. Price functions, in principle, only as an accounting, supervisory and controlling unit ; the enterprises are only partly interested in profits.[1] Supply for industrial production is also expected according to the plan from the " centre ". If this supply fails, responsibility for the non-fulfilment of the plan is transferred to the shoulders of the enterprise responsible for the failure of supply. On the other hand, if a certain enterprise has succeeded in fulfilling the planned task, it is not responsible for the sale of the goods produced : its task is ended with the fulfilment of the planned requirements.

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[1] Part of the profits of the industrial undertakings is reckoned in the so-called " Directors' Fund ", which can be used for personnel bonuses and for off-setting the expenses incurred in improving the well-being of the personnel.

In so far as an individual enterprise is isolated from the direct control of the market, it can fulfil quantitatively the planned task at the expense of quality and costs. Actually, the qualitative side of industrial production (norm of expense of raw material, norm of utilisation of plant equipment, productivity of labour, rate of overhead expenses, quality of production) in Soviet industry is still lower than that of corresponding enterprises in other industrially developed countries.

The principal basic question, as to whether these negative aspects of the development of Soviet industry are outweighed by the positive, cannot be elucidated here, nor whether the Soviet system of industrial production surpasses the competitive system. The elucidation of these questions would require an explanation of the operation of the entire Soviet system for the regulation of the national economy, as well as of the social-cultural results of the operation of this system.

The question as to whether, in spite of the negative side of the development of Soviet industry, a further growth of industrial production and a gradual improvement in the qualitative side of its work can be expected, can be answered in the affirmative, when all the peculiar features of the development of industry are taken into account :

(1) The present Budget, credit and price systems enable the Soviet Government to spend a considerable sum annually on financing further capital construction and increasing industrial output.

(2) The prospected mineral riches of the country provide a raw material basis for further development of industrial production. (With the exception of some rare metals and tropical plants, the U.S.S.R. contains within itself the basis for the organic development of industry.[1])

(3) The country's requirements of goods produced by heavy industry, but more especially by light industry, are very great. It is necessary to expand the railway system, river shipping, roads and housing, which are very

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[1] During the two five-year plans, the Soviet Government has spent an enormous sum on geological survey. This has resulted in the discovery in the territory of the U.S.S.R. of many of the industrial raw materials in which previously Russia was supposed to be poor.

backward compared with the development of industry, agriculture and growth of population. Further utilisation of the water power of the country is possible. Further investment in the light industries, whose equipment is now partly out-of-date, is necessary. At present, the U.S.S.R.'s production of goods per head of population is still very backward, as compared with other countries,[1] especially in the production of consumer goods.

(4) During two five-year plans industry has absorbed a very large number of engineers and technical personnel, and the country still continues to turn out a large number of engineers and also skilled workers.

(5) Defects in planning and direction are gradually becoming less with increased experience. The principal defects are fully appreciated and means are continually sought for their rectification.[2] The Soviet economic press systematically publishes an account of current defects in the work of the enterprises.

. . . .

The abovementioned possibilities of industrial development have been used as a basis for the plan of capital construction and increase of production during the third five-year plan (1938–1942). This plan proposes an increase of 92 per cent. in industrial production during the five years; it plans also to increase the productivity of labour by 65 per cent., to diminish costs by 10 per cent., to improve the quality of production and to effect a general improvement in the quantitative side.[3]

The past two years of the third five-year plan have shown an important rise in industrial production. In 1938, the production of all industry was increased by 11.3 per cent. (For increases in the separate branches of industry see Appendix 1.)

[1] For example production of electric power in 1937, per head in the U.S.S.R., was 215 KW., in U.S.A. 1,160 KW., in Germany 735 KW., and in England 618 KW.; iron, 86 Kg., 292 Kg., 234 Kg., and 183 Kg. respectively; steel, 105 Kg., 397 Kg., 291 Kg., and 279 Kg.; and coal, 757 Kg., 3,429 Kg., 3,313 Kg., and 5,165 Kg., etc.

[2] In particular the "Stakhanov Movement" (which is actually a movement for the improvement of the organisation of separate producing processes, accomplished by individual, highly qualified, enterprising and inventive workers in the different branches of industry, and the extension of their experience to the large mass of the workers) enables the production norm to be raised, increases the possibility of utilisation of producing capacity of industrial plants, diminishes the consumption of raw materials and effects an improvement in the system of progressive piece work of labour.

[3] The project of the Third Five-Year Plan is described in my paper, "Result of the Second Five-Year Plan and the Project of the Third Five-Year Plan," in Memorandum No. 12, published by the Birmingham Bureau of Research on Russian Economic Conditions (University of Birmingham).

In 1939 the increase in industrial production was as follows :—

TABLE I.

	1938	1939	1939 as % of 1938
Production of all State Industry (millions of roubles on 1926/27 value)	84,103·7	96,462·0	114·7
from this			
People's Commissariat of:			
Heavy Machinery	2,393·4	2,720·4	113·7
Medium Machinery	6,077·9	6,997·8	115·1
General Machinery	2,101·6	2,257·0	107·4
Defence Industry (Aviation, Munitions. Armaments, Shipbuilding)	11,556·2	16,935·2	146·5
Coal Industry	1,888·0	2,062·5	109·2
Oil Industry	2,836·1	2,973·6	104·8
Electric Power and Electrical Industry	3,837·6	4,117·3	107·3
Iron and Steel Industry	5,278·9	5,524·6	104·7
Non-Ferrous Metals Industry	1,419·4	1,618·9	114·1
Chemical Industry	3,860·4	4,346·5	112·6
Building Materials	1,549·8	1,632·6	105·3
Timber and Lumber Industry	2,848·1	2,999·3	105·3
Textile Industry	9,054·5	9,850·8	108·8
Light Industry	7,091·7	7,668·0	108·1
Comestibles Industry	10,349·9	11,263·9	108·8
Meat and Dairy Produce	3,790·8	4,329·5	114·2

As is seen from the above figures, increased production has occurred in all branches of industry; particularly large increases have occurred in the following industries :—Defence, Medium and Heavy Machinery, Non-Ferrous Metals and Chemicals, Meat and Dairy Produce; the smallest increases occurred in the Iron and Steel Industry and in the Oil Industry.

The productivity of labour increased in 1939 by 16.7 per cent. However, in spite of this increase, the planned task of increased production was not fulfilled by the majority of the industries. In particular the production of the following industries fell below the planned schedule :—Extraction of iron ore, production of oil, manufacture of iron, some branches of the heavy and general machinery industries, and the chemical industry.

The qualitative side of industrial production in 1939 showed some improvement, but loss from over-expense of raw materials, from wastage and spoiled goods, from non-fulfilment of the planned selection of goods, and from not accomplishing a diminution in cost price, was still high.

Further new capital construction in industry and an important rise in industrial production were planned for 1940. Special attention was drawn to the development of production in the Iron and Steel Industries, Coal Mining, Oil Production, Electrical Production and the Machine and Metal Industries. In the Oil Industry it was planned to put 2,135 new wells into production ; in the Coal Industry it was proposed to work 171 new mines with a producing capacity of 32 million tons ; new Power Stations to produce 636,000 KW. are planned ; it was also proposed to construct six new blast furnaces for iron, 14 new Martin (open hearth) furnaces, eight rolling mills, 18 new iron ore mines, etc. A total rise of 13.6 per cent. in industrial production was projected. For the principal branches of industry, the rise in production for 1940 was planned as follows :—

Extraction of coal was to be increased by 15.7 per cent. ; electrical energy by 11.3 per cent. ; electrical machinery by 13.6 per cent. ; general machinery by 13.6 per cent. ; medium machinery by 13.9 per cent. (in particular, a 37.6 per cent. increase was planned for the production of railway trucks in view of the fact that in the two previous years production had been considerably below the planned amount) ; production of heavy machinery was to be increased by 14.8 per cent. ; in the shipbuilding industry " it was proposed to raise production by 1½ times that of 1939 " ; the production of non-ferrous metals was to be increased by 22.3 per cent., but the rise in the production of textiles was planned at only 6.4 per cent., and in light industries at 7 per cent.[1] It was also planned largely to increase the production of gold and more especially of nickel. Production of the latter was planned to be three times that of 1939.

Productivity of labour was planned to increase by 11 per cent. as an average for the whole of industry ; prices were to be reduced on an average by 2.8 per cent. It was also planned to improve the quality of production.

In general, the plan of capital construction and rise in industrial production projected for 1940 arose from the general task projected by the Five-Year Plan, and was thus the normal yearly outcome of the plan ; there were, however, a few increased demands as compared with the original Five-Year Plan, for the Defence and Shipbuilding Industries. (Statistical data for these are not published, but the extension of plan for the Defence Industry is evident from the figures of the State Budget for 1940.)

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[1] In 1940, it was planned to produce 3,910 million metres of cotton textiles (plus 6.8 per cent.), 287 million metres of linen (plus 12.2 per cent.), 120 million metres of woollen textiles (plus 10 per cent.) and 163 million pairs of shoes. From these figures it is evident how low is the production in the U.S.S.R. of these necessary commodities.

In the current year also, there is to be introduced in the principal branches of industry an increased standard output per head and new schedules which must result in a rise in the productivity of labour.[1]

Further means for reducing waste and for improvement in quality and in choice of goods have been introduced—viz. stronger measures of technical control over the delivery of goods and measures for a stricter adherence to the planned norms of the quantitative and qualitative production. Revision of the administrative staff employed in the central direction and individual undertakings has also been carried out in order to reduce this staff and transfer part of the personnel directly to production. The staff of auxiliary workers in the enterprises has also been revised in order to reduce overhead expenses and to enable a more intensive utilisation of available engineers, technical personnel and skilled workers. The reorganisation of the Economic Soviet in the Supreme Council of the People's Commissars of the U.S.S.R., which has the task of co-ordinating the work of the different Commissariats of Industry, has also been undertaken. During the last few years, as we have mentioned above, many new industrial commissariats have been created with the object of specialisation. This results favourably in a more concrete direction and management of the different branches of industry, but at the same time increases the lack of co-ordination of the work of the various branches of industry. The reorganisation of the Economic Soviet aims at co-ordinating the activities between all branches of industry, thus raising the effectiveness of planning and accomplishment.

Data on the development of industrial production during 1940 show that in the first quarter the planned task was not quite fulfilled, although in many branches of industry there was a rise in production, and the Soviet economic press started a campaign for " fulfilment and over-fulfilment of the plan in the second quarter ". This press is full of reports of the defects in the work of the various branches of industry and in individual plants, defects which were the cause of the non-fulfilment of the plan in the first quarter.

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[1] From 27th July a special extraordinary measure was undertaken aiming at an increase in production. On the 26th July and the 10th August were published Decrees, lengthening the hours of work in all undertakings; for those working seven hours a day work was extended to eight hours and those working six hours a day now work seven. The working week was extended to a six day week instead of a five day week. Since these decrees it is forbidden for the workers and employees to leave an undertaking or change employment without the permission of the director of the undertaking. This permission can be granted only under special circumstances. Heavy penalties have been introduced for violation of this rule, also for absenteeism and in all cases of infringement of labour discipline.

This campaign appears to be a " normal " campaign, and the process of fulfilment of the plan of industrial production in the current year to date also seems to be " normal " taking into consideration all the positive and negative aspects dependent on the peculiar organisational conditions in which the industrial production of the U.S.S.R. develops.

If no extraordinary events occur, it may also be expected that there will be a further growth in production of the principal branches of heavy industry, and to a certain extent also in the light industries in the current year.[1]

APPENDIX 1

Production of the Most Important Branches of Industry

		1913	1929	1933	1937	1938
Machine and Metal Industry ..	Milliard roubles, 1926 value	1,446	3,054	10,822	27,519	33,613
Engines	Conventional units ..	418	602	941	1,581	1,626
Goods Trucks ..	Thousands	14·8	15·9	18·2	66·1	49·1
Motor Cars ..	"	—	1·4	49·7	200·0	211·4
Electric Power ..	Milliard KW.	1·9	6·2	16·4	36·4	39·6
Coal	Million Tons	29·1	40·1	76·3	127·9	132·9
Oil	" "	9·2	13·8	22·5	30·5	32·2
Iron Ore	" "	9·2	8·0	14·4	27·7	26·5
Manganese Ore ..	Thousand Tons ..	1,245	702	1,021	2,752	2,273
Pig Iron	Million Tons	4·2	4·0	7·1	14·5	14·6
Steel	" "	4·2	4·9	6·9	17·7	18·0
Rolled Steel ..	" "	3·5	3·9	5·1	13·0	13·3
Copper	Thousand Tons ..	—	35·5	44·5	—	103·2
Aluminium.. ..	" " ..	—	—	7·0	—	56·8
Cement	Million Tons	1·5	2·2	2·7	5·5	5·7
Cotton Textiles ..	Million Metres ..	2,227	3,068	2,422	3,447	3,491
Woollen Textiles ..	" " ..	95	100·6	86·1	108·3	114·0
Leather Shoes ..	Million Pairs	—	48·8	80·3	164·2	213·0
Raw Sugar ..	Thousand Tons ..	1,290	1,283	995	2,421	2,519

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[1] After this article was already in proof the President of the Supreme Council of the U.S.S.R. in his speech on November 6th stated : " It is expected that industry will achieve a rise in production in 1940 of 13.6 milliard roubles, i.e. by over 11 per cent. in comparison with 1939. The rise in the extraction of coal and also in the iron and steel industries is steady. The extraction of coal in July was 112 per cent. of that of July, 1939; in August 114.3 per cent. and in September 116 per cent. Important successes were achieved in non-ferrous metals. On the whole in the second part of the current year we have had important rises in all principal branches of heavy industry. Light industry has also developed satisfactorily.

APPENDIX 2

Iron and Steel Production

(thousand tons)

	Pig Iron		Steel		Rolled Steel	
	1927–28	1937	1927–28	1937	1927–28	1937
All Regions	3,282	14,488	4,251	17,583	3,408	12,996
Of these :						
Urals	695	2,645	1,006	3,365	860	2,788
Percentage of total	21	18	24	20	25	21
South	2,391	9,171	2,510	9,255	2,013	6,909
Percentage of total	73	63	59	53	59	53
Siberia	10	1,505	6	1,639	4	1,131
Percentage of total	—	10	—	9	—	9
Centre	186	1,167	729	3,126	532	2,170
Percentage of total	6	8	17	18	16	17

APPENDIX 3

Coal Production

(thousand tons)

	1913	1929	1933	1938
All Regions	29,117	40,067	76,333	132,888
Of these :				
Don basin	25,288	30,980	51,060	80,733
Percentage of total	86·6	77·3	66·9	60·8
Moscow Area	300	1,261	3,833	7,416
Percentage of total	1·0	3·1	5·0	5·6
Kuz basin	774	3,004	9,160	17,388
Percentage of total	2·7	7·5	12·0	13·0
Urals	1,217	2,072	4,200	8,062
Percentage of total	4·2	5·2	5·5	6·1
Eastern Siberia and Minusinsk basin	847	1,161	2,889	6,850
Percentage of total	2·9	2·9	3·8	5·2
Far East	345	1,123	2,678	4,752
Percentage of total	1·3	2·8	3·5	3·6
Kazakhskaia S.S.R.	90	73	1,229	4,427
Percentage of total	0·3	0·2	1·6	3·3

Book Reviews

A History of Economic Ideas. By EDMUND WHITTAKER. Longmans, Green & Co. New York. 1940. xii + 766 pp. $4.

In this American textbook the interesting attempt is made to present the history of economic ideas not in a single chronological exposition but by dealing in each of twenty-five chapters with the history of one of the main problems with which economics has had to deal. In the treatment of each problem the development of institutions and general economic conditions is discussed along with the development of theoretical (and untheoretical) thought and a great deal of general economic history and the history of political ideas is thus mixed up with the history of economics proper. This is perhaps an advantage where students of economics cannot be expected to study more than one book on the historical aspects of their subject. But for this purpose it would be necessary that in this treatment by separate topics the main tendencies in the evolution of the discipline as a whole and the connection between the views of one author on different problems be also brought out clearly—a task of the greatest difficulty which Edwin Cannan in his *Review of Economic Theory* came nearest to solving by a very restrictive selection of the authors whose views he discussed. It is no reflection on the author of the present book to say that in his much more ambitious attempt to give a fairly complete account of the history of economics in this fashion, he has scarcely succeeded in this respect. The result is that, although the book was probably meant to provide the one textbook which would give the student all the knowledge he required in its field, he will hardly fully understand the significance of the doctrines discussed unless he reads the book together with one of the ordinary chronological accounts of the evolution of economics.

Apart from this difficulty, which is inherent in its plan, the book will unquestionably prove useful. It gives a workmanlike and careful account of the discussions of the main problems, the selection of the authors discussed is skilful and often deviates to its advantage from the traditional pattern, and ample and well-selected quotations give a good idea of the type of reasoning employed by the various writers. There are a few points where one might quarrel with the detail of the exposition, and the affiliation of ideas is sometimes left more obscure than necessary. The statement, e.g., that Malthus in his *Inquiry into the Nature and Progress of Rent* " gave a presentation of the Ricardian theory of rent superior to that of Ricardo himself " would hardly suggest to the reader that the pamphlet by Malthus, which is quoted, appeared *before* Ricardo's first exposition of the theory of rent was published in the same year. But minor flaws of this kind are more than compensated by the sure touch which the author shows in the treatment of such difficult questions as the various methodological disputes and the general well-balanced character of the discussion.

F. A. v. HAYEK.

Education and the Birth-Rate: A Social Dilemma. By GRACE G. LEYBOURNE and KENNETH WHITE. Jonathan Cape Ltd. 1940. vii + 375 pp. 10s. 6d. net.

If the value of this book depended upon its success in proving its central thesis we might have to regard it as a failure. Indeed, it is doubtful whether the thesis is susceptible of proof at all by ordinary statistical methods, and the authors themselves seem, at times, to be aware of this. But whether the thesis itself is true or not, whether or not the book establishes its truth, the explanations into which the authors have been led have, nevertheless, produced results of high value. Chief of all perhaps is the very necessary illumination they bring to the intricate, and often little suspected relationships that exist between processes at work in English society, and the driving forces that lie behind the desire for education. England has been described with some justice as the land of the Taken For Granted, and among the things we have been in the habit of taking for granted is just this play of social forces—ambitions, rivalries, class-desires and the rest—in the forms and modes of access to education. Thus it is common enough to hear claims made on behalf of the peculiar virtues of certain schools which, if they are valid at all, rest not so much upon successful educational practice in the strict sense as upon special social advantages that such schools enjoy.

It is equally common to find the widespread desire for secondary education taken as evidence of a great educational awakening, when it may be no more than evidence of a desire to make increasing use of the school as a guarantee of social mobility.

The thorough and systematic analysis of existing practice which the authors provide, and the illuminating account they give of the social history by which the practice is to be explained, have the great merit of emphasizing the need for a much more explicit awareness of the real forces that shape the overt procedure.

Briefly the argument is that, for about a century now, a strong tendency has been at work to organise the professions and other forms of employment in England, to impose certain conditions of entrance, especially educational conditions, and to make the conditions more stringent from time to time. Concurrently, privilege has diminished and open competition has been more widely employed. A measure of general education given to the whole mass of the people has increased the number of potential aspirants for places as well as the numbers of ambitious parents who desire for their offspring a better chance than they themselves enjoyed. Especially has there grown up in the middle classes a strong conviction that schools of a certain type—usually non-State boarding schools—because of the social cachet they can give irrespective of the intrinsic quality of the education they provide, offer a much better avenue to worldly success than do other schools. But such schools are expensive and even the day State schools, though less costly, demand considerable sacrifices from the parents of many of the pupils who attend them.

Hence, it is argued, a strong tendency to restrict the size of families so as to give a better chance to those who do get born. This tendency, we are assured, is spreading downwards to the lower social ranks.

It may well be so. The desire to secure for their children, not necessarily the best education but the form of education that affords the best fighting weapon in a competitive world may well have the effect of inducing parents to restrict families.

But how can such a thesis be ' proved ' ? The application of statistical methods must involve assumptions that can be checked only by a highly confidential enquiry into personal motives, the range and complexity of which are simply staggering. It is not enough to show statistically that scholarship winners and fee-payers at secondary schools tend to come from the smaller families. That gives no proof that the smallness of the family was *caused* by the desire for better education. The factors at work might well have been other than this and then the mere *fact* of the family's smallness gave the children a competitive advantage.

But it is upon such assumptions of motive that the argument for the thesis rests. Here is an example (p. 162) : " To-day the poor man's large family is commonly found to consist of many ' unwanted ' children, who would never be born if the habit of contraception were opened to the parents ".

We are entitled to ask the authors : " How do you know that ? Do you exclude altogether the possibility of a large family being ' wanted ' ? And if you do, how do you propose that the race should be continued ? "

Moreover, is it so certain that the fact of economic pressure alone can bear all this weight of argument ? Are we to assume that it is just knowledge of contraceptive methods that accounts for the small families of the well-to-do and ignorance of them for the larger families of the poor ?

And what of the really wealthy, those upon whom even the cost of expensive education imposes no serious strain ? Ought we not to find some large families there ?

To do the authors justice, they do show more than once some awareness of these difficulties and are perhaps more concerned to illuminate a thesis, to reveal its setting and to show its importance, than to demonstrate its scientific truth. Moreover, towards the end of the book they do suggest that forces may be operating deeper and less controllable than those of sheer economic pressure alone. The book closes with these words :—" It may be that prudence imposed by the strain of financing education could be outweighed by the creation or liberation of stronger incentives to rearing large families. A greater influence might be invoked to overshadow a lesser ".

That is really the beginning of quite another book which would have much less to say about economic pressure and much more about the purposes and methods of education.

For now that contraceptive methods have become so generally known, the decision whether to have children or not comes into the region of ' planning '. The question therefore becomes one of the scale of relative values by which life in general is to be ruled. If then a high value is to be placed upon children and if it is to become the duty of the citizen to rear a considerable family the moral life will have to be set and trained in that direction. And this is a task of education in a sense rather more far-reaching perhaps than we are wont to attach to the word. If once that task is fairly set to education and a considerable measure of success is achieved, we may be reasonably sure that economic and social order would be required to adjust themselves accordingly. There would be fewer luxury flats for childless comfortable incomes and more homes for unluxurious but healthy and reasonably happy families.

F. CLARKE.

The Economic Development of Swansea and of the Swansea District to 1921. By D. TREVOR WILLIAMS. University of Wales Press Board. 1940. 189 pp. 1s. 6d.

This is " Pamphlet No. 4 " of the Social and Economic Survey of Swansea and District which has been undertaken by members of the Staff of the University College of Swansea. It extends to a considerable booklet and with its many admirably produced maps, tables and graphs is in these days remarkable value for the price charged. Mr. Williams has made a substantial contribution to the economic history of one of the most important industrial areas in Wales. It was a task well worth undertaking because the usual casual references to the metallurgical industries of the district and even some general acquaintance with its present appearance leave the enquirer without a clue to the real course of development. A great merit of the study is that it does explain how fresh initiatives came to the rescue when it seemed that industrial decay had set in. There is, Mr. Williams shows, almost continuous expansion, but it has been accompanied by a high degree of discontinuity in the separate causes of the expansion. Since he is primarily interested in the geographical factor, the author begins by postulating that the port of Swansea with its hinterland constitutes a favoured district and he sets himself the task of explaining what has been made of the advantages it offers. At the beginning of the eighteenth century the population of Swansea was little over a thousand. It was then, and had long been, a small port with an export trade in coal, mostly coastwise ; and it is interesting to note that coal export has been a constant factor through all the vicissitudes of the last two hundred years.

It was the presence of coal that led to the early experiments in the smelting of copper and lead. The history of copper smelting in the district—actually at Neath—goes back to 1584 and was a natural development because the copper ore of Cornwall could easily be transported to the coal of Glamorgan. Similarly the lead mined in Cardiganshire was shipped to Neath. Capital was forthcoming from Bristol, London and Birmingham and almost insensibly a metallurgical centre emerged with results that frustrated the hopes of those who envisaged for Swansea a future as a health resort. Subscriptions were raised to find means " to obviate the inconvenience arising from the smoke produced by smelting copper ores," but industrialism had taken firm hold ; the birthplace of Beau Nash turned its back on the world of fashion.

Mr. Williams gives a clear analysis of the coal resources of the valleys of the region—anthracite, bituminous and steam—and he demonstrates the part played by each. It was not able to compete with north-east Glamorgan in the early stages of iron smelting by means of coke, and, even after the introduction of the " hot blast " which made it possible to use anthracite in the furnaces, only moderate progress was made. As far as smelting is concerned the interest centres round the non-ferrous ores. Here everything depended on the economy of conveying ores to the fuel. When it became profitable to smelt ores *in situ*—and particularly when it was no longer profitable to mine ores in Great Britain—the situation completely changed. Swansea imported copper precipitates and regulus. On this basis the industry continued to prosper until the end of the decade, 1880–90 ; then, since actual manufacture was concentrated at Birmingham, Liverpool, Manchester and London, Swansea had no function to play, for copper was increasingly imported in the form of bars and pigs. Copper, however, had given the Swansea district a metallurgical tradition. As copper declined in importance the smelting of spelter developed and a wide market was found, especially in the new agricultural countries, for galvanised sheets. This zinc trade grew steadily until the outbreak of war in 1914. Meanwhile a great works was established at Clydach for the refining of nickel. The factors which led to the choice of location were those which had long governed the development of the area—port facilities to receive the copper-nickel matte from smelting works in Canada, abundance of water, a plentiful supply of anthracite coal and the availability of experienced workers. The relative disadvantages of the area for iron smelting have already been noticed. It came into its own, however, with the transition from iron to steel. The success of the Siemens-Martin process at Landore led to specialisation in steel production and to the supremacy of West Wales in the manufacture of blackplates, tinplates, terneplates and galvanised sheets. At last the ferrous metals had come to compensate for the decline of the non-ferrous. The tinplate industry is now the dominant one. The local steel works supply the requirements of the tinplate works and there has been a consequent integration. The question of the moment is what repercussions the construction of the new works at Ebbw Vale will have on the tinplate industry in West Wales. On this Mr. Williams prudently refuses to prophesy.

Much careful investigation lies behind this booklet. Mr. Williams rarely nods. He writes 'Leadstep' for 'Lydstep' (p. 45), he slips into placing Cardigan in North Wales (p. 74), and he post-dates the first use of coke in the smelting of iron by Abraham Darby at Coalbrookdale (p. 97).

J. F. Rees.

The Economics of Ancient Greece. By H. Michell. Cambridge University Press, Cambridge. 1940. vi + 415 pp. 18s.

This book, by the Professor of Political Economy at McMaster University, gives a careful and readable survey of Greek economic life from the period of Homer to that of Alexander, with occasional sidelights on the Hellenistic conditions. The social structure, the economic ideology, agriculture, mining, labour, industry, commerce, money, banking and public finance of the Greek states are discussed by an author who, as can be seen from his notes, has consulted most of the sources and the relevant modern literature which refers to his subject. The economics of antiquity are not only of interest to the Classical scholar. Here, the modern economist too finds important material to prove or to explode economic theories. To give a few examples, Classical Greece, as well as the Rome of the Republic and the earlier Principate, represents types of "free economy" which are different from the European 19th century, it is true; but they nevertheless show on many occasions the laws or at least the trends of more recent times. In addition, it is well known that the Ancient Oriental monarchies, Hellenistic Egypt, Hellenistic India and, to a certain degree, the Late Roman Empire, were primitive planning states. The facts of their normal economic life, their crises and their social and economic ideology, deviating from the modern way of living as they often appear, could be used with the necessary caution to increase our scanty material on the results of planning economy over long periods where surveys of modern conditions cannot offer reliable experience.

The author gives many reasons why the "free economy" of Classical Greece, which he carefully describes, was menaced necessarily by collapse. The Hellenic social prejudices alienated the upper classes of the nation from business life and its understanding, and made them unable to develop economic theory. Greece was too poor and its natural foundation too weak for continuous economic progress.

The technique of the age was more than primitive, a conclusion which the author derives from a detailed survey of all spheres of Hellenic craftsmanship. The institution of slavery offered serious disadvantages to the industrial use of some of the more important technical inventions which were made during the Classic and Hellenistic periods. The Greek system of public finance remained absolutely unsound from political reasons. The Homeric king was unable to tax the land sufficiently. The tyrants based their budget on extraordinary income from confiscations and booty. The free states did not dare to levy high regular taxes from their own citizens, and had to be satisfied, as a rule, with income from non-citizens and with emergency levies from the *demos*. The invention of coined money brought nevertheless economic progress ; but not as much as might have been reached.

Classical Greece remains from any point of view a wonderful and strange world which will always attract scholars and readers, and will never be forgotten. It is pleasant to think that this useful book was written in the New and published in the Old World in spite of our life-and-death struggle. Similar monographs on the other periods of Antiquity would be a great help for Classics as well as for Economists.

F. M. HEICHELHEIM.

Whale Oil. By KARL BRANDT. Food Research Institute, Stanford University, California. 1940. 264 pp. $3.00.

This excellent economic survey of whaling and whale oil is No. 7 in the Fats and Oils Studies of the Food Research Institute.

Before the war, the annual output of whale oil was some half-a-million tons. This is not large when compared with a world output of animal and vegetable fats of well over twenty million tons. Moreover, whale oil is usually somewhat cheaper than most of its substitutes. Nevertheless it is quite important enough to justify the present full and well-documented study. Whaling is a major industry of Norway, and before the war the margarine of Great Britain and Germany (the two great consumers of whale oil) was about 40 per cent. whale oil.

In the middle years of the last century the United States had most of the world's whalers. The almost complete disappearance of American whaling was due partly to the replacement of candles and whale oil, for lighting, by petroleum, and partly to the victory of steam over sail, but mainly to the greater attractions offered to American labour and capital by other and less risky fields of enterprise.

" Modern whaling is an achievement of the Norwegians. They were its pioneers, are its most skilled masters, and rank to this day as the unchallenged leaders in efficiency." The harpoon grenade, the inflation of the carcass to keep it afloat, the floating factory, are all due to Norwegians. Yet, just before the war, Norway's share in world output was falling. From 1932 to 1935 she and Great Britain had each produced some 200,000 tons of whale oil, and other countries relatively little. After 1935 Japan and Germany went into whaling on a large scale, producing between them over 100,000 tons a year. They did this largely to get raw materials without paying foreign exchange.

The subsidized whaling fleets of these two countries, aiming at high present yields, increased the danger of 'over-fishing'. The best proof that this danger was a real and urgent one is the marked decline in the percentage of blue whales in the total catch—from over 60 per cent. around 1930 to below 40 per cent. in recent years. The blue whale (a monster of 100 tons) yields considerably more oil than the fin whale; these two form the great bulk of the catch, which is nearly all taken in the Antarctic. It seems probable that each tribe of whales keeps to its own feeding-grounds, so that one tribe can be greatly reduced in numbers (a whale cow bears one calf about each two years) relatively to another. Various attempts at international co-operation, in the long-run interests of whaling, were made in the 'thirties, but were not really effective owing mainly to the attitude of Japan and Germany.

It is interesting to note Professor Brandt's conclusion that despite the large proportion of the whale oil output bought by Unilever, " competition in the whale-oil market has hardly ever been keener than in the period 1919–1939. He ascribes this to " the almost perfect competition between the various fats " and " the persisting conflicts of interests of various groups of actual and potential buyers of whale oil ".

F. Benham.

The Anthracite Coal Industry of the Swansea District. By A. E. C. Hare. University of Wales Press Board. 1940. 84 pp. 1s.

This is No. 5 in the series of pamphlets forming a social and economic survey of Swansea and District, and published on behalf of the University College of Swansea.

It discusses the production of anthracite, which is the main industry of the Swansea district (employing more persons than steel), and the conditions of demand for it during recent years. It is interesting to note that the demand for it grew during the depression, reaching a peak of over 6 million tons in 1933–34. This happened because it is used largely for domestic heating and is used in special appliances which make difficult the substitution of other fuels. A substantial proportion of the output was exported, mainly to France and other European countries.

Jevons once observed that South Wales anthracite provided " a splendid opportunity " for a monopoly. But its output is below 7 per cent. of world output, and the Amalgamated Anthracite Collieries (formed in 1923), whose fortunes are reviewed here, has not been very successful.

F. Benham.

Indian Population Problems. Edited by G. S. Ghurye. Karnatak Publishing House, Bombay. 1939. Not consecutively paged. Rs. 5.

This bulky " Report and Proceedings of the second All-India Population and First Family Hygiene Conference ", despite its extraordinarily inconvenient arrangement—or rather lack of arrangement, for there is no list of contents or authors, no index, and no explanation of the order followed, let alone any attempt at summary or synthesis—affords welcome evidence that the population problem (in the broadest sense) is, at last, coming into its own in India. It has long been clear to the discerning that the pressure of population and peculiar family relationships and institutions in India affect fundamentally every social and economic problem, necessitating a special approach and remedies, and rendering inappropriate many reforms and methods successfully applied elsewhere. Nevertheless, until the last few decades reformers have tended to ignore these problems, and to concentrate on relatively secondary matters, such as tariff reform and other types of assistance to Indian industries and trade. The changed outlook to which this volume bears eloquent testimony, gives hopes that in the future a better sense of proportion will prevail, and, in particular, that economic problems will be studied and tackled in their full social context, instead of as a series of independent equations.

This report contains matter of very varied value—' messages,' opening and ' welcome ' addresses, votes of thanks, abstracts of papers received, sectional addresses and summaries of discussions being mixed, indiscriminately, with serious contributions to very varied aspects of the problems of population and hygiene in India. Even if one confines oneself to the scientific contributions, it is impossible for the reviewer to make any general survey of or comment upon such a wide selection of subjects. Let it suffice to say that the papers—many of which have been contributed by eminent authorities drawn from various professions and walks of life—cover subjects ranging from statistical, clinical and sociological studies of population changes, vital statistics, infant mortality, and birth control; medical studies of abortion, the crippled child, recuperative exercises after pregnancy and the periodicity of plague; and studies in public health and housing; to subjects of primarily economic interest, such as the depopulation of Mysore villages, population and unemployment in India, and the economic factor in nutrition. The papers are particularly strong on the statistical side, and the statistical demographer can be strongly recommended to consult the volume. To the reviewer the most interesting papers were the somewhat regrettably few, more strictly ' sociological ' studies, for instance of Indian customs and institutions affecting sex-life, marriage and reproduction. It is to be hoped that the Report of the next Conference or Conferences will be more systematically compiled, and thus render much valuable material more readily accessible to the relevant experts.

Vera Anstey.

The Co-operative Movement in Bengal. By J. P. Niyogi. Macmillan & Co. Ltd. 1940. 255 pp. 10s. 6d.

For several decades the Co-operative Movement was regarded as the most hopeful method of achieving agricultural progress and of solving the problem of indebtedness in India. But the slow development of the co-operative spirit and the set-back experienced as a result of the depression of the 'thirties, have tended to discredit the whole movement and to direct attention to other remedies. This is unfortunate, as co-operation—if well-organised and wisely directed—could undoubtedly do more than anything else to solve the problems of short and perhaps medium-term credit, and of educating the masses in better methods of production and sale.

In the volume under review Mr. Niyogi examines the position and working of Bengal's co-operative credit and marketing societies, with the object of showing what mistakes have been made in the past and how the movement has departed from sound co-operative principles. He examines *seriatim* the aims and early history of the movement, and the work of primary societies, of Central, Provincial and Mortgage Banks, and of production and marketing societies. He also discusses clearly and sensibly the principles and problems of co-operative marketing in the light of experience in other countries, and the importance of the administrative factor in co-operation. He is particularly successful in demarcating the limits beyond which co-operation is unlikely to be successful. He insists, for instance, that ordinary co-operative credit societies should not attempt to deal with long-term indebtedness, and that the redemption of old debts should be viewed as part of a comprehensive plan of economic reconstruction, and not as a problem that can be tackled simply by the promotion of co-operation.

Mr. Niyogi's chapter on the problems of co-operative marketing is extremely useful, and in general he succeeds in laying down clearly the lines along which the movement should be guided if it is to provide credit for the credit-worthy and to bring modern methods of preparation for the market and of marketing within the reach of peasants and handicraftsmen. More than this co-operation cannot hope to do. The problems of freeing the masses from the trammels of the past, whether in the spheres of debt or of land tenures, and of enabling agriculture to provide a reasonable standard of life for those dependent upon it, must be solved by other and more fundamental reforms. Mr. Niyogi's book is, therefore, of primary importance in indicating the proper rôle of co-operation, and what can be achieved within this strictly limited sphere by good direction and organisation. Co-operation is not a nostrum for all ills, but is a useful method of enabling a large and essentially peasant population to adapt itself to modern conditions and to improve its competitive position.

Vera Anstey.

Primitive Polynesian Economy. By Raymond Firth. Geo. Routledge & Sons, Ltd. 1939. xv + 387 pp. 15s.

Land, Labour and Diet in Northern Rhodesia. By Audrey I. Richards. Oxford University Press. 1939. xvi + 415 pp. 30s.

The general body of economic doctrine is divisible into three broad parts. First there are the principles of substitution, a series of propositions of universal validity, examining the implications of scarcity. Such propositions as the old-fashioned law of diminishing marginal utility and the law of diminishing returns come under this head. Secondly, there is descriptive economics, concerned to explain how certain social institutions work. Under this head comes the analysis of the price mechanism as it works in European societies, and under it too should come studies of central planning, of the Chinese, the African, and other economies. As each of these economies works differently, principles formulated under this head are strictly local in validity. Lastly comes political economy, which is concerned to appraise and to advocate. Its principles are few or none, since each man has his own opinion in these matters and no one can be proved to be wrong except by appealing to his personal system of ethics.

Failure to recognise this threefold division is a frequent source of confusion. This is, perhaps, why Dr. Firth is a little disappointed with the small help he has received from the writings of professional economists in the important study he has made of the economic system of a Polynesian community. His study falls definitely under the head of descriptive economics, and he seems to have felt entitled to find in the professional writings some body of principles which he could use to illuminate his own researches. Instead he found their terms inapplicable, and their ' laws ' invalid. The reason for this is simple. The professional writers have confined themselves almost exclusively to describing the institutions through which western Europeans allocate their scarce resources. The laws of this system are different from those which govern the economic systems of other peoples. Economics is not, as one of Dr. Firth's reviewers has suggested, bad science because its laws are not universally applicable. It is good science because it describes different things differently.

Can there be any universal principles of descriptive economics ? I think not. Recently some writers have published books called, more or less, *Principles of Primitive Economics*. They are mostly bad books. They are dreary catalogues of social institutions which tell you everything about everybody, but leave you knowing nothing about anybody. It may one day be possible to write a book which sets out in a general way the various problems which every economic system has to solve, e.g., the decision what is to be produced, when, where and by whom, how it is to be shared out, who is to care for the community's resources, how the young are to be trained, and so on.

The book might show how different economic systems cope with such problems, and analyse how far the type of institution used to solve one problem affects the solutions given to others. It would not lay down universal principles since no universal principles exist, and it would not try to draw arbitrary distinctions between ‘ primitive ’ and other societies.

Before such a book can be written, however, we must have detailed studies of many different societies. The literature of “ price mechanism ” societies is large ; that of the others scanty. Economists, therefore, owe a great debt to Dr. Firth and Dr. Richards, each of whom has produced a painstaking and systematic analysis of a non-price mechanism society. Dr. Firth sets out deliberately to write a piece of descriptive economics ; Dr. Richards is interested primarily in dietary problems, but her researches lead her into what is really a description of the disposal of scarce resources. I am in no position to estimate the accuracy of their descriptions ; but there can be no doubt that they have asked the right questions and marshalled their answers excellently. In descriptive economics, as Dr. Firth himself writes, “ too often when one requires the principles which govern the production of bread one is given a description of a stone implement ”. Our debt to these two writers is the greater because they set an example which later writers will be able to follow.

The question which remains in my mind after reading these books is, “ What is the efficiency of economic systems of this kind as compared with the efficiency of price mechanism societies ? ” There is now quite a body of literature which speculates on the problem whether or not a socialist society would maximise satisfactions better than one with institutions such as those of Great Britain. Both Dr. Firth’s Tikopia and Dr. Richards’s Bemba are communities where the laws of property are different from those of Great Britain, where freedom of enterprise is severely restricted by a body of religious or other traditional practices, and where exchange is subject to all sorts of traditional obligations and customs. How do these communities compare with those which show private property, free enterprise, and impersonal exchange ?

On the technical side there can be no doubt of the answer. Owing as much to freedom of enterprise as to any other cause, several blades of grass grow in Great Britain where only one grows in Tikopia, and only a fraction of a blade in Bemba land. To those who regard economy as the prime virtue this is a final answer. But the object of an economic system is to maximise satisfactions, not just to maximise blades of grass. The customs which hamper enterprise and exchange in Tikopia enter into the scales of preferences. Perhaps a man would catch more fish if he did not destroy his canoe on the death of his son, but the total of his satisfactions would not necessarily be greater. Perhaps he would be richer if he demanded for the hire of his property a payment equal to its marginal productivity, or if he substituted hard bargaining for the traditional " give and take " of Tikopian exchange and the Tikopian labour market. He might be richer, but he would not necessarily be more fully " realising his best self ".

The politicians and administrators who have to take action when faced with this type of problem seldom evade one of two pitfalls. Some are so impressed with what is valuable in the traditions of the people that they set themselves against ' westernisation ', and in practice against change. To those who desire ' progress ' this attitude seems positively dangerous, since it provides the philosophical foundation for refusing education, constitutional change, and other reforms which run counter to the people's traditional scale of preferences. Others take the opposite view. They try to scrap the traditional preferences lock, stock and barrel, and proceed to graft on to the people the principles of what Professor Tawney has chosen to call " the acquisitive society ". Neither Dr. Firth nor Dr. Richards has touched on this problem. They have been content to describe what they have found rather than to appraise or to advocate. Perhaps in later writings they may be tempted to forsake the classrooms of descriptive economics for the platforms of political economy ?

W. ARTHUR LEWIS.

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The Counter-Revolution of Science

By F. A. v. Hayek

III. Social Physics: Saint-Simon and Comte

I

More surprising than anything else in Saint-Simon's career is the great fascination which towards the end of his life he exercised on younger men, some of whom were intellectually his superiors and yet for years were satisfied to devil for him, to recognise him as their leader and to bring coherence and order into the thoughts thrown out by him, and whose whole intellectual careers were determined by his influence. Of no one is this more true than of Auguste Comte, whatever he may have said in later life about " the unfortunate personal influence that overshadowed his earliest efforts " or the " depraved juggler," as he had come to regard Saint-Simon.[1]

It is vain to attempt to distinguish precisely what part of the work of the period of seven years during which they collaborated is Saint-Simon's and what is Comte's—particularly as it seems likely that in conversation Saint-Simon must have been much more stimulating and inspiring than in his writings. Yet so much confusion has been caused about the actual relationships by some historians constantly attributing to Saint-Simon thoughts which occur first in works which appeared under his name but are known to have been written by Comte, while others have tried to vindicate Comte's complete independence of thought, that we must exercise some care about what in itself may not be a matter of great importance.

Auguste Comte was nineteen years of age when in August, 1817, Saint-Simon offered him the position of secretary. The young man had little more than a year before been sent down from the *Ecole polytechnique*, after a brilliant career and just before the final examination, as the ring-leader in an insubordination. Since then he had earned his living as a mathematical coach, at the same time preparing himself for an appointment in America which did not materialise, and had translated a textbook on geometry from the English. During the same period he had steeped himself in the writings of Lagrange and Monge, of Montesquieu and Condorcet, and more recently had taken some interest in political economy.

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[1] See A. Comte, *Early Essays on Social Philosophy*, translated by H. D. Hutton, ' New Universal Library ', London (1911), p. 23; and *Système de politique positive*, 1851-54, Vol. III, p. 16.

This seems to have been the qualification on which Saint-Simon, anxious to develop his "science of production", engaged him to write the further parts of *L'Industrie.*[1] In any case, the new disciple was able to write in the three months or so during which he remained Saint-Simon's paid secretary the whole of the four parts of the third and the first and only part of the fourth volume of that publication.[2]

On the whole his contribution is merely a development of the doctrines of his new master which the disciple pushes somewhat further to their logical conclusions. The third volume is largely devoted to problems of the philosophy of history, the gradual transition from polytheism to the positive era, from the absolute monarchy through the transitory stage of the parliamentary liberal state to the new positive organisation, and, above all, from the old "celestial" to the new terrestrial and positive morals.[3] Only now are we able to watch these transitions because we have learnt to understand the laws to which they are subject.[4] All the institutions existing at any time, being an application of the ruling social philosophy, have their relative justification.[5] And anticipating one of the main features of his later philosophy, Comte sums up in the only sentence of this early work which he would later acknowledge: "There is nothing good and nothing bad absolutely speaking; everything is relative, this is the only absolute statement."[6]

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[1] See H. Gouhier, *La jeunesse d'Auguste Comte*, Vol. I, 1933, ch. 6. As the third volume of this excellent work is not yet published we shall have to rely for Comte's biography after 1817 largely on the same author's brief *Vie d'Auguste Comte*, Paris, 1931.

[2] A. Pereire, *Autour de Saint-Simon*, Paris, 1912, p. 25.

[3] *Oeuvres de Saint-Simon et d'Enfantin* (2nd ed. 1865–78) [*O.S.S.E.*], XIX, pp. 37–8.

[4] *Ibid.*, p. 27: "La grande supériorité de l'époque actuelle . . . consiste en ce qu'il nous est possible de savoir ce que nous faisons; . . . Ayant la conscience de notre état, nous avons celle de ce qu'il nous convient à faire."

[5] *Ibid.*, p. 23.

[6] *L'Industrie*, Vol. III, 2e cahier: "Il ne s'agit plus de disserter à perte de vue pour savoir quel est le meilleur des gouvernements: il n'y a rien de bon, il n'y a rien de mauvais, absolument parlant. Tout est relatif, voilà la seule chose absolue."

No less alarming than the praise of " terrestrial morals " were, to Saint-Simon's supporters, the " Views on property and legislation " contained in volume four of *L'Industrie.* Although in general still mainly utilitarian (and consciously Benthamite[1]) in its insistence on the variability of the contents of property rights and the need to adapt them to the conditions of the time,[2] it strikes a new note in emphasising that, while parliamentary government is merely a form, it is the constitution of property which is the fundamental thing, and that it is therefore " this Constitution which is the real basis of the social edifice "[3]—implying that with the revision of the law of property the whole social order can be changed.[4]

The third volume of *L'Industrie* was hardly completed when most of its liberal supporters withdrew from it after a public protest against the incursion of the journal into a field outside its professed programme and against its advocacy of principles " which were destructive of all social order and incompatible with liberty ".[5] Although Saint-Simon attempted in the introduction of the fourth volume a lame apology and promised to return to the original plan, the first issue of the new volume was also the last. The funds were exhausted and *L'Industrie* and with it Comte's paid position came to an end.

2

He continued, however, to collaborate with Saint-Simon in the various journalistic enterprises which the latter undertook during the next few years. His enthusiasm for his master was still undiminished. Saint-Simon is " the most excellent man he knows ", the " most estimable and lovable of men ", to whom he has sworn eternal friendship.[6] At the next attempt at a journalistic enterprise, the *Politique*, Comte becomes a partner and shareholder with

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[1] *O.S.S.E.*, XIX, p. 13.

[2] *Ibid.*, pp. 82–3, 89.

[3] *Ibid.*, p. 83.

[4] Incidentally, and as a justification of this view, Comte develops for the first time the theory that the present constitution of property in France derives from the conquest of Gaul by the Franks. His statement (*ibid.*, p. 87) that the successors of the victors are still the proprietors while the descendants of the vanquished are to-day the farmers provides the basic idea for the racial theories of history of Thierry and his school. It is on this that Saint-Simon two years later bases his claim of priority *vis-à-vis* Guizot (see *O.S.S.E.*, XXI, p. 192).

[5] A. Pereire, *l.c.*, pp. 25–28.

[6] *Lettres d'Auguste Comte à M. Valat*, Paris, 1870, pp. 51, 53. See also pp. 36–7; (letter dated April 17, 1818) : " Je puis te dire que jamais je n'ai connu de jeune homme aussi ardent ni aussi généreux que lui : c'est un être original sous tous les rapports. J'ai appris, par cette

Saint-Simon.[1] It is just one of the numerous liberal journals which in these years grew up and died like mushrooms; but even its strongly liberal views, the advocacy by Comte of economy and the freedom of the press, did not secure it a life of more than five months. But three months after its death, in September, 1819, Saint-Simon, again with Comte's support, starts another and more characteristic organ,[2] which contains perhaps the most remarkable of Saint-Simon's writings, the *Organisateur*, whose very name was a programme. It was certainly the first of his publications which attracted wide attention inside and outside France and which made him generally known as a social reformer.

This is probably due more than anything else to the prosecution which he drew on himself by the celebrated *Parable* with which the new publication opens. Saint-Simon in this first shows that if France were suddenly deprived of the fifty chief scientists in each field, of the fifty chief engineers, artists, poets, industrialists, bankers and artisans of various kinds, her very life and civilisation would be destroyed. He then contrasts this with the case of a similar misfortune befalling a corresponding number of persons of the aristocracy, of dignitaries of state, of courtiers and of members of the high clergy, and points out how little difference this would really make to the prosperity of France.[3] But although the best known, the parable is by no means the most interesting part of the *Organisateur*. To do justice to its title, he presents for the first time in a series of letters a real plan for the reorganisation of society, or at least a plan for a reorganisation of the political system which would give all social activity the scientific direction which it needs.[4] While the starting-point is now the

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liaison de travail et d'amitié avec un des hommes qui voient le plus loin en politique philosophique, j'ai appris une foule de choses que j'aurais en vain cherchées dans les livres, et mon esprit a fait plus de chemin depuis six mois que dure notre liaison qu'il n'en aurait fait en trois ans si j'avais été seul. Ainsi cette besogne m'a formé le jugement sur les sciences politiques, et, par contre-coup, elle a agrandi mes idées sur toutes les autres sciences, de sorte que je me trouve avoir acquis plus de philosophie dans la tête, un coup d'oeil plus juste, plus élevé." M. Leroy, in quoting this passage (*la vie véritable du comte Henri de Saint-Simon*, *1925*, p. 293), inserts after the first sentence "Saint-Simon est un accoucheur d'idées." Although this sentence is probably not by Comte, we have taken the title of section II from it.

[1] A. Pereire, *l.c.*, p. 60.

[2] The term journal and similar expressions in connection with Saint-Simon's works must not be taken too literally. They all appeared in irregular sequence, often out of numerical order and in different formats and in various editions. This is true of the *Organisateur* even more than of his other works.

[3] *O.S.S.E.*, XX, pp. 17–26.

[4] *Ibid.*, pp. 50–58.

English parliamentary system, which is the best system yet invented, his problem is how this system can be transformed into something resembling his Council of Newton of sixteen years before. The direction must be placed in the hands of the " industrialists ",[1] that is, all those who do productive work. They are to be organised in three separate bodies. The first, the *chambre d'invention*,[2] is to consist of 200 engineers and 100 artists (poets, writers, painters, sculptors, architects and musicians) and would have to draw up the plans for public works. The *chambre d'examination*, consisting of 100 each of biologists, physicists and mathematicians, would have to scrutinise and approve these plans. The *chambre d'exécution*, consisting entirely of the richest and most successful entrepreneurs, would watch over the execution of these works. Among the first tasks of the new parliament would be the reconstitution of the law of property, which " must be founded on a basis most favourable to production ".[3]

The new system will come not only because its inherent advantages will be generally recognised, but, even more important, because it is the necessary outcome of the course the advance of civilisation has taken during the last seven hundred years.[4] This proves that his plan is not a utopia[4] but the result of the scientific treatment of history, a true history of the whole of civilisation, as Condorcet conceived it,[5] which will enable us to continue on the predestined route with open eyes.[6]

As an " example of how industry ought to be conceived "[7] Saint-Simon then inserts two letters (the 8th and 9th) which, as we now know, were written by Comte, who later republished them under his own name.[8] The most important parts of these are the brief passages elucidating Saint-Simon's suggestion that the rise of the new system is the necessary result of the law of progress : " At no period has the progress of society been regulated by a system conceived by a man of genius and adopted by the masses. This would, from the nature of things, be impossible, for the law of human progress guides and dominates all; men are only its instruments ". Therefore, " all we can do is consciously to obey this law, which constitutes our true providence, ascertaining the course it marks out for us, instead of being blindly impelled by it. Here in truth lies the goal of the grand philosophic revolution for our own times."[1] For the rest, and although Comte's contribution still contains few ideas which cannot be found in Saint-Simon's earlier work, these are now presented with a terseness and force of which the latter was never capable. We find now even more stress placed on the need for the " scientific and positive capacity " to replace the old spiritual power,[2] the same exposition of the successive advances of science towards the positive stage till at last philosophy, morals and politics also reach it and thereby make the new scientifically directed social system possible,[3] and the same impatience with the freedom of thought which is the denial of a spiritual power.[4] New is the special emphasis on the role of the new " class which occupies an intermediate position between the men of science, the artists, and the artisans, that of Engineers ", which symbolises the new union between the spiritual and temporal capacities, a union which " prepares the way for this joint direction of society ".[5] Under their direction the whole of society will be organised to " act upon nature " as it is now organised in its separate parts.[6] In this joint enterprise the people will no longer be subjects but associates or partners,[7] and for the first time we find the suggestion that there will then no longer be any need for " government " but merely for " administration ".[8]

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[1] O.S.S.E. XX, pp. 50–58.

[2] The idea of the *chambre d'invention* is probably borrowed from Bacon's *New Atlantis*.

[3] *O.S.S.E.*, XX, p. 59.

[4] *Ibid.*, p. 63.

[5] *Ibid.*, pp. 69–72.

[6] *Ibid.*, p. 74.

[7] *Ibid.*, p. 67.

[8] In the Appendix to the *Système de politique positive*, 1854, later reprinted under the title *Opuscules de philosophie sociale 1819–1828*, Paris, 1883. An English translation of the latter by H. D. Hutton with an introduction by F. Harrison is available in Routledge's ' New Universal Library ' under the title *Early Essays on Social Philosophy*. The references added in brackets to those of the *O.S.S.E* refer to this English edition.

To Comte's contribution Saint-Simon merely added at the end of the second letter a characteristic appeal to the scientists and in particular to the artists, who, as the true " engineers of the soul " as Lenin later described them, are

[1] *O.S.S.E.*, XX, pp. 118–9 (56–7).

[2] *Ibid.*, p. 85 (35).

[3] *Ibid.*, pp. 137–9 (68–71).

[4] *Ibid.*, p. 106 (49).

[5] *Ibid.*, p. 142 (72); for Comte's considerations on the same subject a few years later see also (272–4). The fear that his proposals might one day lead to a " despotism founded on science ", Comte describes as " a ridiculous and absurd chimera which could only arise in minds entirely foreign to positive ideas." *Ibid.*, p. 158 (82).

[6] *Ibid.*, p. 161 (85).

[7] *Ibid.*, p. 150 (77).

[8] *Ibid.*, pp. 144–5 (73): " Le peuple n'a plus besoin d'être gouverné, c'est-à-dire commandé. Il suffit, pour le maintien de l'ordre, que les affaires d'un intérêt commun soient administrées."

to use all the forces of imagination "to exercise on the common mass sufficient action to determine them to follow irrevocably in the direction indicated and to assist their natural leaders in that great co-operation"—a first indication of the later Saint-Simonian theories about the social function of art.[1]

In the further description of the working of his new organisation, Saint-Simon rises to an eloquence unknown to him before. "In the new political order the social organisation will have for its sole and permanent purpose the best possible use for the satisfaction of human needs of all the knowledge acquired in the sciences, the fine arts, and industry"[2] and the increase of that knowledge. He does not stop to describe "the astonishing degree of prosperity to which society can aspire with such an organisation".[3] While so far men have applied to nature only their isolated forces and even mutually counteracted their efforts in consequence of the division of mankind into unequal parts of which the smaller has always used all its power to dominate the other, men will cease to command each other and will organise to apply to nature their combined efforts. All that is required is that in the place of the vague ends which our social system now serves a positive social purpose should be decided upon:

> "In a society which is organised for the positive purpose of increasing its prosperity by means of science, art, and craftsmanship, the most important political act, that of determining the direction in which the community is to move, is no longer performed by men invested with social functions but by the body politic itself; . . . the aim and purpose of such an organisation are so clear and determined that there is no longer any room for arbitrariness of men or even of laws, because both can exist only in the vague, which is, so to speak, their natural, element. The actions of government that consist in commands will be reduced to nil or practically nil. All the questions that will have to be solved in such a political system, namely: By what enterprises can the community increase its present prosperity, making use of a given knowledge

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[1] *O.S.S.E.*, XX, p. 193. Cf. also the passage in Saint-Simon's later *Organisation sociale*, *ibid.*, Vol. XXXIX, p. 136, and Comte's remarks on the same subject in his contribution to the *Catéchisme des Industriels* in *Early Essays*, p. 172.

[2] *Ibid.*, Vol. XX, p. 194.

[3] *Ibid.*, pp. 194–5.

> in science, in art, and in industry? By what measures can such knowledge be dispersed and brought to the furthest possible perfection? And finally by what means can these enterprises be carried out at a minimum cost and in minimum time?—all these questions, I contend, and all those to which they can give rise, are eminently positive and soluble. The decisions must be the result of scientific demonstrations totally independent of human will, and they will be subject to discussion by all those sufficiently educated to understand them. . . . Just as every question of social importance will necessarily be solved as well as the existing state of knowledge permits, so will all social functions necessarily be entrusted to those men who are most capable of exercising them in conformity with the general aims of the community. Under such an order we shall then see the disappearance of the three main disadvantages of the present political system, that is, arbitrariness, incapability and intrigue."[1]

How perfectly this describes the beautiful illusions that ever since Saint-Simon's times have seduced scientifically trained minds! And yet how clearly it appears to us now, even in this first formulation, that it is a delusion; that the idea is based on an extension of the scientific and engineering technique far beyond the field to which they are appropriate. Saint-Simon is fully conscious of the significance of his ambitions; he knows that his way of treating the problem of social organisation "exactly in the same manner as one treats other scientific questions" is new.[2] And how well has he succeeded in his intention *d'imprimer au XIXe siècle le caractère organisateur!*[3]

Yet at first he again fails with his appeals. It is the Bourbon King that he hopes will place himself at the head of the new movement and thereby not only meet all the dangers which threaten his house at the time, but also place France in the front of the march of civilisation. Beside the glory which the Bourbons can acquire by social reforms even the fame of Bonaparte will pale.[4] But the only response is a prosecution as a moral accomplice in the assassination of the Duc de Berry,[5] since in his *Parable* he had incited the people to do away with the nobility. Although in the end he is acquitted, the proceedings serving only to stimulate interest in the editor of the *Organisateur*, the journal does not survive this crisis. Saint-Simon's funds are once again exhausted, and after a new appeal to all those who feel in themselves the vocation to found the philosophy of the nineteenth century and to subscribe as *fondateurs de la politique positive*, also fails, this enterprise too comes to an end.

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[1] *O.S.S.E.*, XX, pp. 199–200.

[2] *Ibid.*, pp. 218, 226.

[3] *Ibid.*, p. 220.

[4] *Ibid.*, pp. 236–7.

[5] *Ibid.*, pp. 240–242.

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Saint-Simon's next two major publications, although his most substantial works, are in the main only elaborations of the ideas sketched in the *Organisateur*. We can watch, however, how he moves more and more in the direction of that authoritarian socialism which was to take definite form only in the hands of the Saint-Simonians. In the exposition of his *Système industriel* (1821)[1]—really more systematic than anything that had yet come from his pen—his main theme is the " measures finally to terminate the revolution ". He no longer attempts to conceal his dislike for the principles of liberty and for all those who by defending it stand in the way of the realisation of his plans. " The vague and metaphysical idea of liberty " " impedes the action of the masses on the individual ".[2] The theory of the rights of men[3] and the critical work of the lawyers and metaphysicians have served well enough to destroy the feudal and theological system and to prepare the industrial and scientific one. But Saint-Simon sees more clearly than most socialists after him that the organisation of society for a common purpose,[4] which is fundamental to all socialist systems, is incompatible with individual freedom and requires the existence of a spiritual power which can " choose the direction to which the national forces are to be applied ".[5] The existing " constitutional, representative, or parliamentary system " is a mongrel system that uselessly prolongs the existence of anti-scientific and anti-industrial tendencies[6] because it allows different ends to compete. The philosophy that studies the march of civilisation,[1] and the positive scientists[2] who are able to base scientific policy on co-ordinated series of historical facts,[3] are still to provide the spiritual power. Much more space, however, is now given to the organisation of the temporal power by the industrialists—a theme which is further developed in the *Catéchisme des Industriels* (1823).[4]

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[1] *O.S.S.E.*, Vols. XXI, XXII.

[2] *Ibid.*, Vol. XXI, p. 16.

[3] *Ibid.*, XXI, p. 83. See also XXII, p. 179.

[4] *Ibid.*, XXI, p. 14; XXII, p. 184.

[5] *Des Bourbons et des Stuarts* (1825) in *Œuvres Choisies*, Vol. II, p. 447.

[6] *O.S.S.E.*, XXII, p. 248. See also p. 258, and XXI, pp. 14 and 80, and XXXVII, p. 179, where his disgust with the lack of organisation in England finds expression in the characteristic outburst that " Cent volumes *in-folio*, du caractère le plus fin, ne suffiraient pas pour rendre compte de toutes les inconséquences organiques qui existent en Angleterre."

To entrust the entrepreneurs with the task of preparing the national budget and therefore with the direction of the national administration is the best means of securing for the mass of the people the maximum of employment and the best livelihood.[5] The industrialists, by the nature of their various works, form a natural hierarchy and they ought to organise into one big corporation which will enable them to act in concert for the achievement of their political interests.[6] In this hierarchy the bankers, who from their occupations know the relations between the different industries, are in the best position to co-ordinate the efforts of the different industries, and the biggest banking houses in Paris, by their central position, are called upon to exercise the central direction of the activities of all industrialists.[6] But while the direction of the work of all productive workers is to be in the hands of the entrepreneurs as their natural leaders, they are to use their powers in the interests of the poorest and most numerous classes[7]; the subsistence of the proletarians must be secured by the provision of work for the fit and the support of the invalids.[8] In the one great factory which France will become, a new kind of freedom will exist: anticipating the formula which Friedrich Engels was later to make famous, we are promised that under the new and definite organisation, which is the final destiny of mankind,[9] the governmental or military organisation will be replaced by the administrative or industrial.[10] The obstacle to this re-organisation are the nobles and the clergy, the lawyers and the metaphysicians, and the military and the proprietors who represent the two past eras. The bourgeois, who have made the revolution and destroyed the exclusive privilege of the nobility to exploit the wealth of the nation, have now merged into one class with the latter, and there are now only two classes left.[1] In the political struggle for the right to exploit, which has continued since the revolution, the industrialists, that is, all those who work, have not yet really taken part. But

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[1] *O.S.S.E.*, XXII, p. 188.
[2] *Ibid.*, p. 148.
[3] *Ibid.*, XXI., p. 20.
[4] *Ibid.*, XXXVII–XXXIX.
[5] *Ibid.*, XXII, p. 82. See also XXI, pp. 131–2.
[6] *Ibid.*, XXI, p. 47.
[7] *Ibid.*, XXI, p. 161.
[8] *Ibid.*, XXI, p. 107.
[9] *Ibid.*, XXII, pp. 80, 185.
[10] *Ibid.*, XXXVII, p. 87. See also XXI, p. 151. The formula seems to have been originally Comte's (see above, p. 124) and was later taken over by the Saint-Simonians (see particularly *Exposition*, ed. Bouglé and Halévy, p. 162), in whose publications it occurs once in the form "Il s'agit pour lui (le travailleur) non seulement *d'administrer* des choses, mais de gouverner

> " the producers are not interested in whether they are pillaged by one class or another. It is clear that the struggle must in the end become one between the whole mass of the parasites and the whole mass of the producers till it is decided whether the latter will continue to be the prey of the former or whether they will obtain the supreme direction of a society of which they form already by far the largest part. This question must be decided as soon as it is put directly and plainly, considering the immense superiority of power of the producers over the non-producers.
>
> The moment when this struggle must assume its true character has actually arrived. The party of the producers will not hesitate to show itself. And even among the men whom birth has placed in the class of parasites, those who excel by the width of their views and the greatness of their souls begin to feel that the only honorable rôle which they can play is to stimulate the producers to enter into political life, and to help them to obtain in the direction of the common affairs the preponderance they have already obtained in society."[2]

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To the *Catéchisme des Industriels*, which was to spread these doctrines further, Auguste Comte contributed the third part, a substantial volume called a *Plan for the Scientific Operations necessary for Re-organising Society*,[3] and a year later (1824) republished by its author under the even more

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des hommes, œuvre difficile, immense, œuvre saint " (*Globe*, April 4th, 1831). Engels' use of the expression in the *Anti-Dühring* (*Herrn Eugen Dühring's Umwälzung der Wissenschaft*, 3rd ed., 1894, p. 302) runs in the original : " An die Stelle der Regierung über Personen tritt die Verwaltung von Sachen. Der Staat wird nicht 'abgeschafft', *er stirbt ab*."

[1] *O.S.S.E.*, XXXVII, p. 8.

[2] *Ibid.*, XXII, pp. 257–8.

[3] Later included under the original title in the *Early Essays on Social Philosophy*, pp. 88–217.

ambitious title *System of Positive Policy*—" a title premature indeed, but rightly indicating the scope " of his labours, as Comte said thirty years later.[1]

In this first form the " positive system " is little more than a restatement of Saint-Simonian doctrine.[2] Comte now carries still further his hatred of the dogma of the liberty of conscience, which is the great obstacle to re-organisation.[3] Just as in astronomy, physics, chemistry, and physiology there is no such thing as liberty of conscience,[4] so this transitory fact will disappear once politics has been elevated to the rank of a natural science and the true and final doctrine has been definitely established.[5] This new science of *Social Physics*, that is to say, the study of the collective development of the human race, is really a branch of physiology, or the study of man conceived in its entire extension. In other words, the history of civilisation is nothing but the indispensable result and complement of the natural history of man."[6] Politics is thus on the point of becoming a positive science in accordance with the law of the three stages, which is now enounced in its final form : " Each branch of knowledge is necessarily obliged to pass through three different theoretical states : the Theological or fictitious state ; the Metaphysical or abstract state ; lastly the Scientific or positive state ", the definite state of all knowledge whatsoever.[7]

The object of social physics is to discover the natural and unavoidable laws of the progress of civilisation which are as necessary as that of gravitation.[8] By civilisation Comte means " the development of the human mind and its result, the increasing power of man over nature ", the ways in which he has learnt to act upon nature to modify it to his own advantage.[9] It is civilisation in this sense, that is the state of Science, Fine Arts, and Industry, which determines and regulates the course of Social Organisation.[10]

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[1] *Early Essays*, Author's Preface, p. 24.

[2] Leaving it open as to how much of this " Saint-Simonian " doctrine may not be due to Comte's earlier contributions.

[3] *Early Essays*, pp. 96, 98.

[4] *Ibid.*, p. 97. This has now of course become orthodox Marxist doctrine. Cf. Lenin, " What is to be done ? " (in *Little Lenin Library*), p. 14 : " Those who are really convinced that they have advanced science, would demand not freedom for the new views to continue side by side with the old, but the substitution of the old views by the new ones."

[5] *Early Essays*, pp. 130, 136, 107.

[6] *Ibid.*, pp. 200–1.

[7] *Ibid.*, pp. 131–2.

[8] *Ibid.*, pp. 147–9, 157.

[9] *Ibid.*, pp. 144, 133.

[10] *Ibid.*, pp. 144, 149.

Social physics, which, like all science, aims at prevision, enables us by observing the past to determine the social system which the progress of civilisation tends to realise in our own day.[1] The superiority of positive politics consists in the fact that it *discovers* what is made necessary by these natural laws while other systems *invent*.[2] All that remains for us to do is to help into life the positive system which the course of civilisation tends to produce, and we are certain to secure the best system now obtainable if we discover that which is most in harmony with the present state of civilisation.[3]

It will be noticed how close Comte's view on the philosophy of history, which is commonly regarded as the opposite of a "materialist" interpretation, comes to that view—particularly if we remember the exact meaning which he gives to the term civilisation. In fact what anticipation of the materialist interpretation of history can be found in the Saint-Simonian writings—and we believe that they are the main source of the doctrine—can be traced directly to this and some of the earlier works of Comte.[4]

Although soon after the publication of the *Catéchisme des Industriels* Comte was finally to break with Saint-Simon when the latter began to turn his doctrine into a religion, the next two works which Comte published shortly after Saint-Simon's death in the Saint-Simonian *Producteur*[5] still continue the common line of thought. The first of these is of interest mainly for the more careful analysis of the progress towards the positive method. He shows how man "necessarily begins by regarding all the bodies which attract his attention as so many beings animated with a life resembling his own,"[6] and it is interesting that at this stage Comte, who only a few years later was to deny the possibility of all introspection,[1] was still explaining this by the fact that " the personal action exerted by man on other beings is the only kind of which he comprehends the *modus operandi* through his consciousness of it ".[2] But already he is on the way to denying the legitimacy of the disciplines which are based precisely on this knowledge. His attacks now aim not merely at the " revolting monstrosity ", the anti-social dogma of the liberty of conscience,[3] and the anarchy of unregulated individualism generally,[4] but are already more specifically directed against the teachings of political economy.[5] Only by historical considerations can it be explained how that " strange phenomenon ", the idea that a society ought not to be consciously organised, could ever have arisen.[6] But as " everything that develops spontaneously is necessarily legitimate during a certain period ",[7] so the Critical Doctrine has had a relative justification during the past. But a perfect social order can be established only if we can in all cases " assign to every individual or nation that precise kind of activity for which they are respectively fitted ".[8] But this presupposes a spiritual power, a moral code, of which again Comte cannot conceive except as deliberately constructed.[9] The necessary moral order can therefore be created only by a Government of Opinion which determines " the entire system of ideas and habits necessary for initiating individuals into the social order under which they must live ".[10] The ideas, which, after he had allowed himself for twenty years to be deeply influenced by Comte, finally so revolted J. S. Mill that he described them as " the completest system of spiritual and temporal despotism which ever yet emanated from a human brain, unless possibly that of Ignatius Loyola,"[11] were present in Comte's thoughts from the beginning. They are a necessary consequence of the whole system of thought which not only J. S. Mill, but the whole world, has taken over from Comte.

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[1] *Early Essays*, pp. 191, 180.

[2] *Ibid.*, p. 165. Compare for a use of the same terms by Engels in his exposition of the materialist interpretation of history his *Herrn Eugen Dühring's Umwälzung der Wissenschaft* (English ed., *Herrn Eugen Dühring's Revolution in Science*, p. 300, Trl. by E. Burns (Martin Lawrence)), where he says that the means by which the existing abuses can be got rid of "are not to be *invented* by the mind, but *discovered* by means of the mind in the existing factors of production."

[3] *Ibid.*, pp. 154, 165, 167, 170.

[4] Although the influence of Saint-Simonian doctrine on the birth of the materialist interpretation of history has often been pointed out (see particularly F. Muckle, *Henri de Saint-Simon*, Jena, 1908, and W. Sulzbach, *Die Anfänge der materialistischen Geschichtsauffassung*, Karlsruhe, 1911), these authors appear to have all overlooked that the crucial passages occur nearly always in works which are known to have been written by Comte.

[5] *Producteur*, Vol. I, 1825, pp. 289, 596; Vol. II, 1825, pp. 314, 348; and Vol. III, 1826, p. 450. These essays have been included by Comte in the collection of *Early Essays* in the appendix to the *Politique positive* and will be found in the English edition (pp. 218–275 and 276–332) under the titles "Philosophical Considerations of the Sciences and Men of Science" and "Considerations on the Spiritual Power."

[6] *Early Essays*, p. 229.

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[1] In a review of F. J. V. Broussais, *De l'irritation et de la folie*, 1828, published in the same year and also included in the *Early Essays*. See particularly p. 339.

[2] *Ibid.*, p. 219.

[3] *Ibid.*, pp. 295, 281.

[4] *Ibid.*, p. 250.

[5] *Ibid.*, pp. 306, 320–324.

[6] *Ibid.*, p. 282.

[7] *Ibid.*, p. 281. The curious similarity of this statement to certain thoughts of Hegel, which will occupy us on a later occasion, will not escape the reader.

[8] *Ibid.*, p. 307.

[9] *Ibid.*, pp. 319–20: " Every doctrine presupposes a founder."

[10] *Ibid.*, p. 301.

[11] J. S. Mill, *Autobiography*, 1873, p. 213.

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There is little more to say about the last phase of Saint-Simon's life. While the *Catéchisme des Industriels* was in the process of publication, a new financial crisis in his affairs threatened him again with starvation, and early in 1823 the old man, now really discouraged, tried to blow out his brains. He recovered, however, from the self-inflicted wound with the loss of one eye, and soon assistance came from a new, enthusiastic and this time wealthy pupil. The young banker and former instructor at the *Ecole Polytechnique*, Olinde Rodrigues, not only provided for Saint-Simon's necessities during the last two years of his life, but also became the centre of the little group which after his death developed into the *Ecole Saint-Simonien*. He was soon joined by the poet Léon Halévy, the physiologist Dr. Bailly, the lawyer Duveyrier and others. With them Saint-Simon prepared the *Opinions littéraires*, *philosophiques et industrielles* (1825) in which the banker, the poet and the physiologist each elaborated the parts of the doctrine of the master for which they had special competence. Only a little later in the same year appeared the last work of Saint-Simon, marking the final phase of his work, the *Nouveau Christianisme*.

Already for some time Saint-Simon had shown an increasing tendency away from the narrowly " scientific " and towards a more mystical and religious form of his doctrine. This had indeed been the final cause of the estrangement between him and Comte, who, however, towards the end of his own career, was to undergo a similar change. In Saint-Simon's case this development is really a return to his first ideas. Since the great schism at the time of the reformation none of the Christian churches represents true Christianity. They have all neglected the fundamental precept that men should behave as brothers towards each other. The main object of true Christianity must be " the speediest improvement of the moral and the physical existence of the poorest class "—a phrase which appears on almost every page of the brochure and which became the watchword of the Saint-Simonian group. Since the churches have made no use of their opportunity to improve the lot of the poor by the teaching and encouragement of the arts and the organisation of industry, the Lord is now addressing the people and the princes through His new prophet. He undertakes to reconstruct theology, which from time to time needs to be renewed, just as physics, chemistry and physiology must be periodically re-written.[1] The new theology will pay more attention to the terrestrial interests of man. All that is required is such an organisation of industry that it will assure a great amount of work of the kind which will secure the quickest advance of human intelligence. "You can create such conditions; now that the extent of our planet is known, let the scholars, the artists and the industrialists draw up a general plan of the works which must be carried out in order that the terrestrial possessions of the human race be put to the most productive use and made the most agreeable to inhabit in all respects."[2]

Saint-Simon survived the appearance of the *Nouveau Christianisme* by only a few weeks. He died in May, 1825, at the age of 65, calmly expecting his death while discussing future projects with the group of pupils that now surrounded him. The life that had been an example of the precepts he had laid down for all future sociologists, "passing through all classes of society, putting oneself personally in the greatest number of different social positions, and even creating for oneself and others relationships which have never existed before",[3] ended in peace, tolerable comfort and even in a considerable reputation.

The funeral re-united the older pupils like Thierry and Comte with the new. The old Saint-Simon had just seen the beginnings of the school that under his name was to spread far and wide a body of ideas derived from his own. It is due to them that he has become a figure of considerable importance in the history of social ideas. While he was certainly an *original*, he was scarcely an original or profound thinker. The ideas which he bequeathed to his pupils were unquestionably held by many people at the time. But by his persistence and enthusiasm he gained adherents for them among men who were capable of developing them and in whom he inspired sufficient enthusiasm to act as a body in spreading them. As one of his French biographers has said, his rôle was *de faire flamboyer les idées comme des réclames lumineuses*.[1] He has performed it to perfection.

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[1] *O.S.S.E.*, XXIII, p. 99.

[2] *Ibid.*, p. 152.

[3] *Ibid.*, Vol. XV, p. 82.

IV. THE RELIGION OF THE ENGINEERS: ENFANTIN AND THE SAINT-SIMONIANS

I

Less than a month after Saint-Simon's death his friends and disciples constituted themselves into a formal association in order to realise the project of another journal which he had already discussed with them. The *Producteur*, which appeared in six volumes in 1825 and 1826, was edited by the group under the leadership of Olinde Rodrigues, with the collaboration of Auguste Comte and some others who were not strictly members. Soon another young engineer, who had seen Saint-Simon only once, when Rodrigues introduced him, was to become the outstanding figure of the group and editor of its journal.

Barthélemy-Prosper Enfantin was the son of a banker. He had entered the *Ecole Polytechnique* but had left it in 1814, two years before Comte, and, like him, without completing the course. He had since entered business, spent some years travelling and working in Germany and Russia, and had recently devoted some time to the study of political economy and particularly of Bentham's works. Although his education as an engineer had remained incomplete, or perhaps because of this, his belief in the unlimited powers of the mathematical and technical sciences remained one of the most characteristic features of his intellectual make-up. As he explained on one occasion, "when I have found the words *probabilities*, *logarithm*, *asymptote*, I am happy, because I have regained the road which leads me to formulas and forms".[2] An unusually handsome man according to the views of his contemporaries, he seems to have possessed a great personal charm and even magnetism, which enabled him gradually to swing the entire Saint-Simonian movement in the direction into which his sentimental and mystical bent led him. But he also possessed considerable powers of intellect which enabled him to make important contributions before Saint-Simonism passed from its philosophical to its religious phase.[1]

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[1] H. Gouhier, *La jeunesse d'Auguste Comte*, Vol. II, p. 3.

[2] Quoted by G. Pinet, *Ecrivains et Penseurs Polytechniciens*, 2nd ed., Paris, 1898, p. 180, from the *Livre nouveau, Résumé des conférences faites à Ménilmontant.*

It has been said, with some truth, that Saint-Simonism was born after Saint-Simon's death.[2] However pregnant in suggestions Saint-Simon's writings were, he never achieved a coherent system. It is probably also true that the very obscurity of his writings was one of the greatest incentives to his disciples to develop his doctrines further. It also explains why the importance of the joint efforts of Saint-Simon and his pupils has rarely been properly appreciated. The natural tendency of those who have recognised it has been to ascribe too much to Saint-Simon himself. Others, who have been led by this to study Saint-Simon's own writings, have been bound to turn away disappointed. The real force which decisively influenced European thought were the Saint-Simonians and not Saint-Simon himself. And we must never forget that the greatest of the Saint-Simonians in their early years, and the medium through whom many of them had received the doctrine of the master,[3] was Auguste Comte, who, as we know, still contributed to the *Producteur*, although he was no longer a member of the group and soon broke off all relations with them.

2

The new journal had for its expressed purpose " to develop and expand the principles of a philosophy of human nature based on the recognition that the destiny of our race is to exploit and modify external nature to its greatest advantage ", and it realised that this could best be done by " incessantly increasing [its] association, one of the most powerful means at its command ".[4] In order to attract the general public the programmatic articles were interspersed with others on technological or statistical subjects, which were often written by outsiders. But most of the journal was written by the little group of disciples. There can also be little doubt that, even during the year when the *Producteur* was the centre of their activities, Enfantin had already the largest share in the development of the doctrines of the school, although for some time his position was equalled or even overshadowed by the powerful personality of another new recruit, Saint-Amand Bazard.[1] Slightly older than Rodrigues or Enfantin, and as a former member of the French Carbonari movement an experienced revolutionary, he joined the collaborators of the *Producteur*, who already (in the persons of Cerclet and Buchez) had attracted some old Babouvists and Carbonaris. But although they, and Bazard in particular, played an important part in leading the Saint-Simonians towards more radical views, it is probable that the latter's doctrinal contributions are usually over-rated.[2] His articles in the *Producteur*, apart from an even fiercer hatred of the liberty of conscience[3] than had been shown by Saint-Simon or even Comte, add little that is new. The same is true of most of the other contributors except Enfantin and, of course, Comte, although the elaboration of the Saint-Simonian doctrine of the social function of art by Léon Halévy must not be allowed to pass unnoticed. He sees the time approaching when the "art of moving the masses" will be so perfectly developed that the painter, the musician, and the poet "will possess the power to please and to move with the same certainty as the mathematician solves a geometrical problem or the chemist analyses any substance. Then only will the moral side of society be firmly established".[4] The word propaganda was not yet used in this connection, but the art of the modern Ministers of Propaganda would have been fully appreciated and were even foreseen by the Saint-Simonians.

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[1] On Enfantin and the Saint-Simonians generally see S. Charléty, *Histoire du Saint-Simonisme*, Paris, 1896 (new ed., 1931), still the best exposition of the Saint-Simonian movement. It is rather surprising that Enfantin himself has not yet been made the subject of a monograph. S. Charléty, *Enfantin*, Paris, 1930, is merely a useful collection of texts with a brief introduction.

[2] S. Charléty, *Enfantin*, p. 2.

[3] " Le travail de M. A. Comte . . . a servi à plusieurs entre nous d'introduction à la doctrine de Saint-Simon." *Doctrine de Saint-Simon*, *Exposition*, *Première Année*, ed. Bouglé and E. Halévy, Paris, 1924, p. 443. Comte (in a letter to G. d'Eichthal, Dec. 11, 1829) claims even more influence on the Saint-Simonians : " Vous savez fort bien que je les ai vus naître, si je ne les ai formés (ce dont je serais du reste fort loin de me glorifier) . . . ; les prétendues pensées de ces messieurs ne sont autre chose qu'une dérivation ou plutôt une mauvaise transformation de conceptions que j'ai presentées et qu'ils ont gatées en y mettant les conceptions hétérogènes dues à . . . Saint-Simon." E. Littré, *Auguste Comte et la philosophie positive*, Paris, 1863, pp. 173–4.

[4] *Producteur*, Vol. I, 1825, Introduction.

Important developments occur in the economic articles which Enfantin contributed to the *Producteur*. The growth of nearly all the new elements of the social doctrine of the Saint-Simonians, which we shall meet presently in their final form in the *Exposition*, can be traced in these articles. The general interest in the problems of industrial *organisation*, the enthusiasm for the new growth of joint-stock companies, the doctrine of general association, the increasing doubts about the usefulness of private property and about interest, the plans for the direction of all economic activity by the banks, all these ideas were gradually worked out and were more and more strongly emphasized. We must here be content to quote two sentences particularly characteristic of his approach to the problems. One ridicules the idea that " a human society could exist without an intelligence which directs it ".[1] The other describes the concepts which have so far formed the pre-occupation of political economy, namely " value, price, and production, which do not contain any constructive idea for the composition or organisation of society," as " irrelevant details ".[2]

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[1] On Bazard see W. Spühler, *Der Saint-Simonismus. Lehre und Leben von Saint-Amand Bazard* (*Zürcher Volkswirtschaftliche Forschungen*, hg. v. M. Saitzew, No. 7) Zürich, 1926.

[2] The true relationship between him and Enfantin is probably best described by their contemporary Louis Reybaud (*Etudes sur les réformateurs contemporains ou socialistes modernes*, Brussels, 1841, p. 61) when he says that "M. Enfantin trouvait la pensée, M. Bazard la formulait." Compare also: C. Gide and C. Rist, *Histoire des doctrines économiques*, 4th ed., 1922, p. 251.

[3] *Producteur*, Vol. I, p. 83.

[4] *Producteur*, Vol. I, pp. 399 *et seq*; Vol. III, pp. 110 and 526 *et seq.* Bazard's articles were the immediate occasion for one of Benjamin Constant's most eloquent essays in defence of liberty.

3

The *Producteur*, which had appeared first weekly and then monthly, came to an end in October, 1826, by exhaustion of the funds and of the contributors. While this meant the cessation for three years of all public activity of the group, there had already been created a common doctrine which could serve as the basis for intensive propaganda by word of mouth. It was at this time that they had their first great successes among the students of the *Ecole Polytechnique*, to which they specially directed their efforts. As Enfantin later expressed it : " The *Ecole Polytechnique* must be the channel through which our ideas will spread through society. It is the milk which we have sucked at our beloved School which must nourish the generations to come. It is there that we have learnt the positive language and the methods of research and demonstration which today secure the advance of the political sciences."[3] The success of these efforts was such that within a few years the

[1] *Producteur*, Vol. III, p. 74.

[2] *Producteur*, Vol. IV, p. 86.

[3] *O.S.S.E.*, Vol. XXIV, p. 86. In a letter to Fournel of June, 1832 (quoted by G. Pinet, " L'Ecole Polytechnique et les Saint-Simoniens," *Revue de Paris*, May 15, 1894, p. 85), Enfantin describes the Ecole Polytechnique as " la source précieuse où notre famille nouvelle, germe de l'humanité future, a puisé la vie. Or, le prolétaire et le savant aiment et respectent cette glorieuse Ecole."

group consisted of some hundred engineers with only a sprinkling of doctors and a few artists and bankers, who were mostly left over from Saint-Simon's immediate disciples, or, like the brothers Pereire, the cousins of Rodrigues, or his friend Gustave d'Eichthal, were personally related to them.

Among the first of the young engineers to join the movement were the two friends Abel Transon and Jules Lechevalier,[1] who through their knowledge of German philosophy helped to give the Saint-Simonian doctrines a certain Hegelian veneer which later proved so important in helping their success in Germany. A short time after followed Michel Chevalier, later famous as an economist, and Henri Fournel, who, to join the movement, resigned a position as director of the Creuzot works and later became Saint-Simon's biographer. Although himself never a pupil of the *Ecole Polytechnique*, since he had spent his youth with his father in exile, Hippolyte Carnot must be counted with this group, not only as the son of Lazare, but still more as the brother of the polytechnician Sadi Carnot, the " founder of the science of energy ", discoverer of the ' Carnot cycle ', the ideal of technical efficiency, with whom he lived in these years while the latter developed his famous theories and at the same time preserved a lively although never active interest in the political and social discussions of his friends,[2] Hippolyte Carnot was at least by tradition and connections, if not by training, as much an engineer as the others.

For a time the flat of the Carnots was the place where Enfantin and Bazard taught an ever increasing number of young enthusiasts.[3] But towards the end of 1828 they had outgrown that accommodation and it was decided that a more formal oral exposition of their views should be given to a larger audience. It is probable that this was suggested by the success of a similar experiment by Comte, who in

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[1] See Ch. Pellarin, *Jules Lechevalier et Abel Transon*, Paris, 1877, which, however, deals largely with the part the two men played later in the Fourierist movement. Lechevalier, after studying German philosophy in France, actually spent a year in Berlin in 1829–30 to attend Hegel's lectures. See S. Bauer, " Henri de Saint-Simon nach hundert Jahren," *Archiv für die Geschichte des Socialismus*, XII, 1926, p. 172.

[2] See *Sadi Carnot, Biographie et manuscrit* publiés sous les auspices de l'Académie des sciences avec une préface de M. Emile Picard, Paris, 1927, pp. 17–20. Cf. also G. Mouret, *Sadi Carnot et la science de l'énergie*, Paris, 1892. The *Réflexions sur la puissance motrice du feu* appeared in 1824, although their importance was recognised only much later.

[3] See H. Carnot, " Sur le Saint-Simonisme," *Séances et travaux de l'Académie de sciences morales et politiques*, 47e année, nouvelle série tome XXVIII, 1887, p. 132.

1826 had begun to expound his *Positive Philosophy* to a distinguished audience, including, besides such scholars as Alexander von Humboldt and Poinsot, also Carnot, who had been sent there by Enfantin to receive his first instruction in Saint-Simonism.[1] Although Comte's attempt had soon been cut short by the mental affliction which interrupted his work for three years, to be resumed only in 1829, it had attracted sufficient attention to invite imitation.

The course of lectures which the Saint-Simonians arranged in 1829 and 1830, in the form in which it has come down to us as the two parts of the *Doctrine de Saint-Simon, Exposition*,[2] is by far the most important document produced by Saint-Simon or his pupils and one of the great landmarks in the history of socialism which deserves to be much better known outside France than it is. If it is not the Bible of Socialism, as it has been called by a French scholar,[3] it deserves at least to be regarded as its Old Testament. And in some respects it did indeed carry socialist thought further than was done for nearly a hundred years after its publication.

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As befits one of the foundations of collectivist thought, the *Exposition* is the product of no single man. Although Bazard, as the most skilful speaker, delivered the majority of the lectures, their content was the result of discussion among the group. The published texts were actually written by H. Carnot from notes taken by him and others during the lectures and it is presumably to him that we owe the elegance and power of the *Exposition*. An important supplement to it are the five lectures on the Saint-Simonian religion which Abel Transon delivered about the same time to the students of the *Ecole Polytechnique*[4] and which are included in some of the editions of the *Exposition*.

It is difficult without tiresome repetition to give an adequate idea of this most comprehensive expression of Saint-Simonian thought, since much of it is of course a more or less faithful reproduction of views we already know.

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[1] See H. Carnot, "Sur le Saint-Simonisme," *Séances et travaux de l'Académie de sciences morales et politiques*, 47e année, nouvelle série tome XXVIII, 1887, p. 129.

[2] *Doctrine de Saint-Simon*, *Exposition*, *Première Année*, 1829, Paris, 1830. *Deuxième Année*, *1829–30*, Paris, 1831. An excellent edition with a valuable introduction and instructive notes by C. Bouglé and E. Halévy was published in the *Collection des Economistes et Réformateurs Français*, Paris, 1924. It is to this edition that all the page references below refer.

[3] C. Bouglé in his Introduction to E. Halévy, *L'Ere des Tyrannies*, Paris, 1938, p. 9.

[4] [Abel Transon], *De la religion Saint-Simonienne. Aux Elèves de l'Ecole Polytechnique.* First published in the (second) *Organisateur*, July-Sept., 1829, and reprinted separately, Paris, 1830, and Brussels, 1831, and at the end of the second edition of the *Exposition*, *Deuxième Année*, *1829–30*. A German translation appeared at Göttingen in 1832.

It is not only, as it claims to be, the sole publication in which the whole of the contribution of Saint-Simon (and, we should add, the young Comte) has been brought into a comprehensive system; but it also develops it further, and it is these developments by Enfantin and his friends which we must mainly consider.

A large part of the more important first year of the *Exposition* is given to a broad philosophic survey of history and of the " law of development of humanity revealed to the genius of Saint-Simon ",[1] which, based on the study of mankind as a " collective being ",[2] shows us with certainty what its future will be.[3] This law asserts in the first instance the alternation of *organic* and *critical* states, in the former of which " all aspects of human activity are ordered, foreseen and co-ordinated by a general theory ", while in the critical states society is an agglomeration of isolated individuals struggling against each other.[4] The final destiny towards which we are tending is a state where all antagonism between men will have entirely disappeared and the exploitation of men by men is replaced by their joint and harmonic action upon nature.[5] But this definite state, where the " systematisation of effort ",[6] the " organisation of labour "[7] for a common purpose[8] is perfected, is reached only in stages. The basic fact of the ever decreasing antagonism between men, which will lead in the end to the " universal association ",[9] implies a " steady diminution of the exploitation of men by men "—a phrase which forms the *leitmotif* of the whole *Exposition*.[10] While the positive advance towards the universal association is marked by the stages of the family, town, nation, and the federation of nations having a common creed in a church,[11] the decrease of exploitation is shown by the changing relations between

[1] *Exposition*, ed. Bouglé and Halévy, p. 127.
[2] *Ibid.*, pp. 131, 160.
[3] *Ibid.*, p. 89.
[4] *Ibid.*, p. 27.
[5] *Ibid.*, p. 162.
[6] *Ibid.*, p. 206.
[7] *Ibid.*, pp. 139, 89.
[8] *Ibid.*, pp. 73, 124, 153.
[9] *Ibid.*, pp. 203, 206, 234, 253.
[10] *Ibid.*, pp. 236, 350.
[11] *Ibid.*, pp. 208–9.

the classes. From the stage when cannibalism was practised on the captive, through slavery and serfdom to the present relations between proletarians and proprietors, there has been a constant decrease of the degree of exploitation.[1] But men are still divided into two classes, the exploiters and the exploited[2]; there is still a class of disinherited proletarians.[3] As the eloquent Abel Transon put it to the young polytechnicians in a passage of his lectures which better than anything in the *Exposition* sums up the main argument:

> "The peasant or craftsman is no longer attached to the man or to the soil, he is not subjected to the whip like the slave; he owns *a greater part* of his labour than the serf, but still, the law is cruel at his expense. All the fruit of his labour does not belong to him. He has to share it with other people who are not useful to him either by their knowledge or by their power. In short, there are no *masters* for him nor *lords*, but there are BOURGEOIS, and so that's what a BOURGEOIS is.
>
> "As the owner of land and capital the bourgeois disposes of these at his will and does not place them in the hands of the workers except on condition that he receive a premium from the price of their work, a premium that will support him and his family. Whether a direct heir of the man of conquest or else an emancipated son of the peasant class, this difference of origin merges into the common character which I have just described; only in the first case is the title of his possession based on a fact which is now condemned, on the action of the sword; in the second case the origin is more honourable, it is the work of industry. But *in the eyes of the future* this title is in any case illegitimate and without value because it hands over to the mercy of a privileged class all those whose fathers have not left them any instruments of production."[4]

The cause of this still existing state of affairs is the "constitution of property, the transmission of wealth by inheritance within the family".[5] But the institution of "property is a social fact, subject, as all other social facts, to the law of progress ".[1] And the new order that will be established will be based on

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[1] *Exposition*, ed. Bouglé and Halévy, pp. 214–216, 238.

[2] *Ibid.*, p. 225.

[3] *Ibid.*, pp. 239, 307.

[4] *De la religion Saint-Simonienne*, Paris, 1830, pp. 48–9.

[5] *Exposition*, ed. Bouglé and Halévy, p. 243.

> " the transfer to the State, which will become an *association of workers*, of the right of inheritance which to-day is confined to the members of the family. The privileges of birth which have already received such heavy blows in so many respects must entirely disappear."[2]
>
> " If, as we proclaim, humanity moves toward a state where all the individuals will be classed according to their capacities and remunerated according to their work, it is evident that the right of property, as it exists, must be abolished, because by giving to a certain class of men the possibility to live on the work of others and in complete idleness, it preserves the exploitation of one part of the population, the most useful one, that which works and produces, in favour of those who only destroy."[3]

They explain that to them land and labour are merely " instruments of work ; and the proprietors and capitalists . . . are the depositories of these instruments ; their function[4] is to distribute them among the workers ".[5] But they perform this function very inefficiently. The Saint-Simonians had studied Sismondi's *Nouveaux principes d'économie politique* which in 1826 had appeared in a second and completely rewritten edition, in which the author for the first time describes how the ravages of economic crises were caused by " chaotic competition ". But while Sismondi had no real remedy to propose and later seems even to have deplored the effects of his teaching,[6] the Saint-Simonians had one. Their description of the defects of competition is almost entirely taken from Sismondi :

> " In the present state of affairs, where the distribution [of the instruments of production] is effected by the capitalists and proprietors, none of these functions is performed except after much groping, experimenting, and many unfortunate experiences ; and even so the result obtained is always imperfect, always temporary. Each

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[1] *Exposition*, ed. Bouglé and Halévy, p. 244.

[2] *Ibid.*, pp. 253–4.

[3] *Ibid.*, p. 255.

[4] The French word " fonction " of course also means " office ".

[5] *Exposition*, ed. Bouglé and Halévy, p. 257.

[6] In a letter to Channing in 1831 he admitted " I have shown the defects of the system of free competition, I have demolished, but I lack the strength to reconstruct." J. C. L. Simonde de Sismondi, *Fragments de son journal et de sa correspondance*, Genève-Paris, 1857, p. 130. On the general influence of Sismondi which can here not be adequately discussed see J. R. de Salis, *Sismondi*, Paris, 1932.

> person is left to act on his own individual knowledge; no general conspectus guides production; it takes place without judgment, without foresight; it is deficient at one point and excessive at another."[1]

The economic crises are thus due to the fact that the distribution of the instruments of production is effected by isolated individuals, ignorant of the requirements and needs of industry and of the people, and of the means that can satisfy them.[2] The solution which the Saint-Simonians propose was at the time completely new and original. In the new world which they invite us to contemplate

> "there will be no longer any proprietors, no isolated capitalists, who by their habits are strangers to industrial activity, yet who decide the character of the work and the fate of the workers. A *social* institution is charged with these functions which to-day are so badly performed; it is the *depository* of all the instruments of production; it presides over the exploitation of all the material resources; from its point of vantage it has a comprehensive view of the whole which enables it to perceive at one and the same time all the parts of the industrial *workshop*; through its ramifications it is in touch with all the different places, with all kinds of industries, and with all the workers; it can thus take account of all the general and individual wants, bring men and instruments to where the need for them makes itself felt; in a word, it can direct the production and put it in harmony with consumption and entrust the tools to the most deserving industrialists, because it incessantly endeavours to discover their capacity and is in the best position to develop them . . . In this new world . . . the disturbances which follow from the lack of general accord and from the blind distribution of the agents and instruments of production would disappear and with them also the misfortunes, the reverses and failures of business against which to-day no peaceful worker is protected. In a word, industrial activity is *organised*, everything is connected, everything foreseen; the division of labour is perfected and the combination of efforts becomes every day more powerful."[3]

The "social institution" which is to perform all these functions is by no means left vague and undetermined as it was by most later socialists. It is the banking system, properly reconstructed and centralised and crowned by a single *banque unitaire*, *directrice*, which is to serve as the planning body:

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[1] *Exposition*, p. 258.
[2] *Ibid.*, pp. 258–9.
[3] *Ibid.*, p. 261.

> "The social institution of the future will direct all industries in the interest of the whole society and specially of the peaceful workers. We will call this institution provisionally the general system of banks, making all reservations against the too narrow interpretations which one might give to this term.
>
> "The system will comprise in the first instance a central bank which represents the government in the material sphere; this bank will become the depository of all wealth, of the whole productive fund, of all the instruments of production, in short of everything that to-day makes up the whole mass of private property."[1]

We need not follow the *Exposition* further into the detail of the proposed organisation.[2] Even the main points given will suffice to show that in their description of the organisation of a planned society they went much further than later socialists till quite recent times, and how heavily later socialists have drawn on their ideas. Till the modern discussion of the problem of calculation in a socialist community this description of its working has not been further advanced. Marx, characteristically, added to it the one part of classical English economics which was out of tune with its general analysis of competition, the 'objective' or labour theory of value. The general results of the fusion of Saint-Simonian and Hegelian ideas, of which Marx is of course the best-known exponent, will occupy us on a later occasion.

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[1] *Exposition*, pp. 272–3. It may be noted that this seems to be the first occurrence of the term 'central bank'.

[2] The following passage from the *Exposition*, *Deuxième Année* (Première Séance, Résumé de l'exposition de la première année, ed. 1854, pp. 338–9), deserves, however, to be quoted: "Pour que cette *association industrielle* soit réalisée et produise tous ses fruits, il faut qu'elle constitue une hiérarchie, il faut qu'une vue générale préside à ses travaux et les harmonise . . . il faut absolument que l'Etat soit en possession de tous les instruments de travail qui forment aujourd'hui le fonds de la propriété individuelle, et que les directeurs de la société industrielle soient chargés de la distribution de ces instruments, fonction que remplissent aujourd'hui d'une manière si aveugle et à si grands frais les *propriétaires* et *capitalistes* . . . alors seulement on verra cesser la scandale de la concurrence illimitée, cette grande négation critique dans l'ordre industriel, et qui, considérée sous son respect le plus saillant, n'est autre chose qu'une guerre acharnée et meurtrière, sous une forme nouvelle, que continuent se faire entre eux les individus et les nations." The opening of the passage shows clearly that at this stage they were using the term 'association' in precisely the sense in which two years later they introduced the term 'socialism'.

But in so far as that general socialism which to-day is common property is concerned, little had to be added to Saint-Simonian thought. As a further indication of how profoundly the Saint-Simonians have influenced modern thought, it need only be mentioned to what a great extent all European languages have drawn from their vocabulary. 'Individualism,'[1] 'industrialist,'[2] 'positivism,'[3] and the 'organisation of labour'[4] all occur first in the *Exposition*. The concept of the 'class struggle' and the contrast between the 'bourgeoisie' and the 'prolétariat' in the special technical sense of the terms are Saint-Simonian creations. The word 'socialism' itself, although it does not yet appear in the *Exposition* (which uses 'association' in very much the same sense), appears in its modern meaning for the first time[5] a little later in the Saint-Simonian *Globe*.[6]

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With the appearance of the *Exposition* and a number of articles by Enfantin[7] and others in the new Saint-Simonian journals *Organisateur* and *Globe* which we need not further consider, the development of their ideas which is of interest to us came more or less suddenly to an end. If we cast a quick glance over the further history of the School, or rather the Saint-Simonian Church as it presently became, it will show why its immediate influence was not greater, or rather, why that influence was not more clearly recognised. The reason is that under Enfantin's influence the doctrine was turned into a religion; the sentimental and mystic elements gained the upper hand over the scientific and rational, just as they did in the last phases of Saint-Simon's and later of Comte's life. Already the second year of the *Exposition* shows an increasing tendency in that direction. But in its further career the literary activities are of less importance and it is to the organisation of the Church and to the practical application of its doctrines that we must look for the picturesque qualities and sensational doings of the new church which have attracted more attention than the earlier and more important phase of its activity we have considered.[1]

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[1] *Exposition*, p. 377. See, however, A. Comte in *Lettres à Valat*, pp. 164–5, for an informal use of the term in a letter dated March 30, 1825.

[2] *Ibid.*, p. 275. 'Industrialism' was coined by Saint-Simon himself to describe the opposite of Liberalism. See *O.S.S.E.*, XXXVII, pp. 178, 195.

[3] *Ibid.*, pp. 487, 183.

[4] *Ibid.*, pp. 139, 98.

[5] Strictly speaking both the terms 'socialist' and 'socialism' had already been used in Italian (by G. Guiliani) in 1803, but had been forgotten. Independently of this, 'socialist' occurs once in the Owenite *Co-operative Magazine* for November, 1827, and 'socialism' (although in a different sense) in a French Catholic journal in November, 1831. But it was only with its appearance in the *Globe* that it was immediately taken up and frequently used, particularly by Leroux and Reybaud. See C. Grünberg, "Der Ursprung der Worte 'Sozialismus' und 'Sozialist'," *Archiv für die Geschichte des Sozialismus und der Arbeiterbewegung*, Vol. II, 1912, p. 378. Cf. also *Exposition*, ed. Bouglé and Halévy, p. 205, note.

[6] *Le Globe*, February 2, 1832. The word occurs in an article by H. Joncières and the context in which it occurs is so significant that the whole sentence may be quoted: "Nous ne voulons pas sacrifier la personalité aux socialisme, pas plus que ce dernier à la personalité."

[7] Some of the articles of Enfantin in the *Globe* which have been collected in a separate volume under the title *Economie politique et Politique* (Paris, 1832) deserve, however, to be specially mentioned.

The new religion consisted at first merely of a vague pantheism and a fervent belief in human solidarity. But the dogma was much less important than the cult and the hierarchy. The School became a Family over which two Supreme Fathers, Enfantin and Bazard, presided as new popes with a college of apostles and various other grades of members below them. Services were organised at which not only the doctrine was taught, but at which the members soon began publicly to confess their sins. Itinerant preachers spread the doctrine all over the country and founded local centres.

For a time the success was considerable, not only in Paris but throughout France and even in Belgium. Among their group then, they counted P. Leroux, Adolphe Blanqui, Pecqueur and Cabet. Le Play was also a member[2] and in Brussels they gained a new enthusiast for social physics in the astronomer and statistician, A. Quetelet, who had already been profoundly influenced by the circle of the *Ecole Polytechnique*.[3]

The July revolution of 1830 found them altogether unprepared but naïvely assuming that it would put them into power. It is said that Bazard and Enfantin even requested Louis Philippe to hand over to them the Tuilleries since they were the only legitimate power on earth. One effect of the revolution on their doctrines appears to have been that they felt compelled to make some concessions to the democratic tendencies of the age. The originally authoritarian socialism thus begins its temporary partnership with liberal democracy. The reasons for this step are, however, explained by the Saint-Simonians with an amazing frankness, rarely equalled by later socialists: "We demand at this moment liberty of religious practice in order that a single religion can be more easily erected on the ruins of the religious past of humanity; . . . the liberty of the press, because this is the indispensable condition for the subsequent creation of a legitimate direction of thought; the liberty of teaching, in order that our doctrine can be more easily propagated and become one day the only one loved and followed by all; the destruction of the monopolies as a means of arriving at the definite organisation of the industrial body."[1] Their real views, however, are better shown by their early discovery of, and enthusiasm for, the organising genius of Prussia[2]—a sympathy which, as we shall presently see, was reciprocated by the 'Young Germans', one of whom, with some justification, remarked that the Prussians had long been Saint-Simonians.[3] The only other doctrinal development during this period which we need mention is their increasing interest in railways, canals and banks, to which so many of them were to give their life-work after the dispersal of the School.

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[1] See H. R. d'Allemagne, *Les Saint-Simoniens 1827–1837*, Paris, 1930.

[2] See G. Pinet, *Ecrivains et penseurs polytechniciens*, 2nd ed., Paris, 1898, p. 176, and S. Charléty, *Histoire du Saint-Simonisme*, 1931, p. 29.

[3] See G. Weill, "Le Saint-Simonisme hors de France," *Revue d'histoire économique et sociale*, Vol. IX, 1921, p. 105. A Saint-Simonian mission consisting of P. Leroux, H. Carnot and others had visited Brussels in February, 1831; and although, apart from the remarks of Weill just quoted, there is no direct evidence for the influence of the Saint-Simonians on Quetelet, it is remarkable how precisely from this date his ideas developed in a direction very similar to Comte's. On this see J. Lottin, *Quetelet, statisticien et sociologue*, Louvain and Paris, 1912, pp. 123, 356–367, also 10 and 21.

Already Enfantin's early attempt to turn the School into a Religion had led to certain tension among the leaders and some desertions. The real crisis came, however, when he began to develop new theories about the position of women and the relation between the sexes. There was practically nothing in the teaching of Saint-Simon to justify this new departure and the first elements of this new doctrine were probably an importation from Fourierism, with its theory of the couple, man and woman, constituting the true social individual. For Enfantin there was only a short step from the principle of the emancipation of women to the doctrine of the "rehabilitation of the flesh" and the distinction between the "constant" and "inconstant" types among both sexes, which both should be able to have it their way. These doctrines and the rumours which got around about their practical application (for which, it must be admitted, the Saint-Simonians gave ample cause in their writings[1]) created a considerable scandal. A break between Enfantin and Bazard followed, and the latter left the movement, to die nine months later. His chair was left vacant for the *Mère suprême*, who, as George Sand had declined the honour, had not yet been found. With Bazard some of the most eminent members, Carnot, Leroux, Lechevalier and Transon seceded, the last two becoming Fourierists; and a few months later even Rodrigues, the living link with Saint-Simon, broke with Enfantin.

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[1] *L'Organisateur*, Vol. II, pp. 202, 213, quoted by S. Charléty, *Histoire du Saint-Simonisme*, 1931, p. 83.

[2] *Globe*, June 3 and 8, 1831, quoted by Charléty, l.c., p. 110.

[3] Karl Gutzkow, *Briefe eines Narren an eine Närrin*, 1832, quoted by E. M. Butler, *The Saint-Simonian Religion in Germany*, Cambridge, 1926, p. 263.

Faced with a serious setback, since a financial crisis made it necessary to discontinue the *Globe*, and as they had also begun to attract the attention of the police, Enfantin with forty faithful apostles withdrew to a house at Ménilmontant, at the outskirts of Paris, to start a new life in accordance with the precepts of the doctrine. The forty men started there a community life without servants, dividing the menial tasks between them and observing, to silence the ugly rumours, strict celibacy. But if their life was half modelled on that of a monastery, in other respects it was more like that of a Nazi *Führerschule*. Athletic exercises and courses in the doctrine were to prepare them for a more active life in the future.

Although they voluntarily confined themselves to their estate, they did not cease in their attempts to attract notoriety. The forty apostles who in their fantastic costumes cultivated their garden and tended their home became for a while the sensation of the Parisians, who flocked there in thousands to watch the spectacle. In consequence the 'retreat' by no means reassured the police. Proceedings against Enfantin, Chevalier and Duveyrier were instituted for outraging public morality and ended with their being condemned to imprisonment for one year. The march of the whole group in the costumes and with the spades and other implements on their shoulders to the law courts, and the sensational defence of the accused, was almost the last public appearance of the group. When Enfantin entered the St. Pelagier prison to serve his sentence the movement began rapidly to decline and the establishment in Ménilmontant soon broke up. A group of disciples still gave the people much to talk about by their journey to Constantinople and the East *pour chercher la femme libre.*[1] But when Enfantin left the prison, although he organised another journey to the East, it was for a more sensible purpose. He and a group of Saint-Simonians spent some years in Egypt, trying to organise the piercing of the Isthmus of Suez. And although they at first failed to obtain support, it is largely due to their efforts that later the Suez Canal Company was founded.[2] As we shall again have occasion to mention, most of them continued to devote their lives to similar useful efforts—Enfantin to founding the Paris-Lyon-Méditerranée railway system and many of his disciples to organising railway and canal constructions in other parts of France and elsewhere.[3]

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[1] Duveyrier, e.g., one of the oldest members, wrote in the *Globe* of January 12, 1832: "On verrait sur la terre ce qu'on n'a jamais vu. On verrait des hommes et des femmes unis par un amour sans example et sans nom, puisqu'il ne connaîtrait ni le refroidissement, ni la jalousie; des hommes et des femmes se donneraient à plusieurs sans jamais cesser d'être l'un à l'autre et dont l'amour serait au contraire comme un divin banquet augmentant en magnificence en raison du nombre et du choix des convives."

(*To be concluded.*)

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[1] Apparently the expression *chercher l a femme* is also of Saint-Simonian origin.

[2] See J. Lajard de Puyjalon, *L'Influence des Saint-Simoniens sur la réalisation de l'Isthme de Suez*, Paris, 1926.

[3] See M. Wallon, *Les Saint-Simoniens et les chemins de fer*, Paris, 1908, and H. R. d'Allemagne, *Prosper Enfantin et les grandes entreprises du XIX^{e} siècle*, Paris, 1935.

Consumption, Investment and National Expenditure in Wartime

By ALFRED MAIZELS

THE general opinion of economists, at the outbreak of war, was that private consumption would have to be reduced by at least one-third[1] in order that sufficient labour-power, raw materials and fixed capital (new and old) could be diverted to the war industries. In the White Paper[2] issued in connexion with the recent Budget Statement estimates are given of the value of personal expenditure in the years 1938 and 1940. Personal expenditure rose from the peace-time average of approximately £999 millions a quarter to £1,084 millions in the third quarter of 1940, the end of the first year of war.[3] Allowing for the increase in the prices of consumers' goods[4], the re-valued expenditure by civilians in the third quarter of 1940 was in the neighbourhood of £900 millions (at 1938 prices).

The difficulty of re-valuing current values of consumption by a comprehensive index number of consumers' goods prices, makes it necessary to examine the re-valued consumption of each group of personal expenditure. Taking the value of retail sales for food in 1932 as given by Mr. A. E. Feavearyear[5] we can estimate quarterly expenditures by the method outlined by Colin Clark.[6]

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[1] See, for example, R. W. B. Clarke, *The Economic Effort of War*, Ch. 3.

[2] *An Analysis of the Sources of War Finance and an Estimate of the National Income and Expenditure in* 1938 *and* 1940.

[3] The last quarter of 1940 will not be considered here, as the White Paper estimates of Net National Income are based on *estimated* Income Tax assessments. The final estimate for the last quarter of 1940 must be regarded as subject to alteration.

[4] Using the Cost of Living index together with an index of postal charges, each series being re-weighted according to expenditures in 1937.

[5] *Economic Journal*, March, 1934.

[6] ***National Income and Outlay***, pp. 161—162.

TABLE I.

EXPENDITURE ON RETAIL GOODS (£m.)

Seasonal Movement Eliminated.[1]

	Piece Goods	Women's Wear	Men's Wear	Boot and Shoe	Furnishings	Hardware	Fancy Goods	Sport and Travel	Food	Total
1935	16·6	36·4	31·8	14·8	27·2	16·8	34·1	8·4	287	473·1
	16·6	37·2	34·0	15·4	27·0	17·2	33·8	8·6	294	483·8
	16·4	38·0	34·4	15·8	27·4	18·0	34·0	8·1	301	493·1
	16·7	38·2	32·8	15·9	28·6	18·4	35·5	8·1	312	506·2
1936	16·0	37·6	32·8	15·5	27·9	18·2	36·3	8·8	313	506·1
	16·5	38·7	34·0	16·3	29·1	18·5	35·9	8·5	317	514·5
	16·4	40·4	34·6	17·0	29·4	18·6	35·8	8·3	324	524·5
	16·7	39·8	35·5	16·7	29·6	18·4	37·0	8·5	329	531·2
1937	17·0	41·0	35·2	17·3	30·1	18·5	37·4	8·9	337	542·4
	16·6	41·3	36·0	18·1	29·9	18·8	38·6	8·6	354	561·9
	17·0	42·5	35·8	18·1	29·9	19·0	37·1	7·9	351	558·3
	17·1	43·2	37·7	17·8	29·5	18·8	37·5	8·6	360	570·2
1938	15·9	42·8	34·9	17·7	28·9	17·6	35·6	8·0	362	563·4
	16·3	43·0	35·2	18·2	29·1	17·6	37·8	7·8	366	571·0
	15·8	43·5	35·0	19·0	27·6	17·5	36·3	7·5	365	567·2
	16·2	44·2	37·1	18·5	28·6	18·0	37·2	8·4	362	570·2
1939	15·0	44·0	36·1	18·3	28·0	17·2	35·8	7·7	370	572·1
	15·6	43·8	36·1	19·0	28·4	17·6	38·2	7·5	378	584·2
	17·8	47·2	40·7	23·1	26·6	15·7	38·7	7·6	396	613·4
	16·4	43·5	36·3	18·3	24·8	16·5	37·0	7·8	378	578·6
1940	19·1	48·9	39·2	20·6	27·6	18·0	39·5	7·6	389	609·5
	14·5	41·6	33·8	21·1	24·6	16·8	40·9	6·6	407	606·9
	20·8	58·7	51·0	29·5	29·3	16·8	40·6	8·8	381	636·5

These figures relate, of course, only to the money value of each group of commodities sold. To derive a series for "real" consumption each money series should be corrected by an appropriate price index. We shall do this for the food group only, as food is such an important element in total consumption. The *Ministry of Labour* index of retail food prices is used, although it has many deficiencies. In particular, it excludes fruit and vegetables other than potatoes, expenditure on which amounted to 16.3 per cent. of total outlay on retail foodstuffs in 1934.[2] Also the retail trade statistics relate to food consumption by the community as a whole whereas the *Ministry of Labour* index relates only to the urban working classes.[3] A further discrepancy to be noted is that no allowance is made in the index for the wartime shift to cheaper kinds of foodstuffs, especially vegetables. However, this index is used here in the absence of a better index of retail food prices.

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[1] Allowance being made for the changing seasonal movement in wartime.

[2] Sir J. Orr, *Food, Health and Income*, Table I.

[3] The weights for this index are based on budgets collected in 1904. But re-calculation of the index using weights proportional to total expenditures in 1934 gave almost the same index.

TABLE II.

REAL VALUE OF FOOD CONSUMPTION BY PRIVATE PERSONS[1]

	Consumption at Current Prices (£m.)	Index of Food Prices (Average of 1935 = 100)	Consumption at average 1935 prices (£m.)
1935	287	98·5	291
	294	97·9	300
	301	101·4	297
	312	102·2	305
1936	313	103·5	303
	317	103·4	307
	324	104·6	310
	329	105·9	311
1937	337	107·7	313
	354	111·6	317
	351	112·9	311
	360	114·1	316
1938	362	113·3	320
	366	113·6	322
	365	114·7	318
	362	109·5	331
1939	370	109·1	339
	378	110·5	342
	396	111·3	356
	378	120·9	313
1940	389	127·2	306
	407	130·3	312
	381	133·8	285

These figures would seem to suggest that after one year of war we are back to 1935 levels of food consumption. If this were strictly true, it would mean that food consumption fell by about 20 per cent. over the first year of the war.[2] In other words, the community lost about £70 millions worth of food (at 1935 prices).

However, certain qualifications must be made before we can assess the true trend of food consumption. First, the civilian population, to which these figures relate, was decreasing owing to the absorption of men and women into the armed forces. No figures are available as to the extent of this absorption, but from the rough estimates made by the Oxford Institute of Statistics[1] we can say that somewhere between two and two and a half million men and women were so absorbed during the period under review.

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[1] These figures include "Other Groceries", i.e., soap, matches, oil and candles, which are classified together with food in the Bank of England statistics. Expenditure on these items in 1932 was, however, under 3 per cent. of outlay on food proper.

[2] This is approximately the percentage reduction that was suggested by G. Crowther in *Ways and Means of War*, p. 118, and by R. W. B. Clarke, *op. cit.*, p. 53.

The total population of the United Kingdom at the outbreak of war was estimated at 47,676,000.[2] Deducting 450,000 for men in the armed forces[3] we can estimate the total civilian population as approximately 47,226,000 persons in the summer of 1939. Total civilian expenditure on food was £356 millions at 1935 prices for the third quarter of 1939. This represents a weekly expenditure of 11s. 6½d. per head of the population.

One year later, the civilian population was in the neighbourhood of 45 millions, owing to the expansion of the armed forces. Expenditure on food was £285 millions (also at 1935 prices), which represents about 9s. 9d. per head per week.[4] The " amount " (or money value corrected for price changes) of food consumed per head by the civilian population fell by about 15 per cent.[5]

These figures relate to the civilian population as a whole, and not to any particular class or group in the community. More light should be thrown on the latter problem by the various family budget enquiries now proceeding.[6]

A second qualification, albeit a minor one, is the effect of the additional sources of food supply which have become available since the outbreak of war. Such extra food would consist almost entirely of vegetables and would come from private gardens, allotments in public parks, etc. This extra food is, of course, excluded from the scope of the retail trade statistics, and we must also exclude it from our calculation of the National Income owing to the fact that it is not exchanged for money. However, we can estimate what the market value of this extra produce *would have been* had it all been sold on the market. Although the data are rather indefinite, one may conclude that this value would have been approximately £2 Mn. in the first year of war. This item therefore does not materially affect the argument and it will be neglected in the subsequent analysis.

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[1] *Bulletin No.* 2, 1940.

[2] *Statistical Abstract*, 1940, p. 4.

[3] 1939 estimates for Army, Navy and Air Services.

[4] This compares with the 9s. per head per week for 1934 calculated by Sir J. B. Orr, *Food, Health and Income*, p. 67, and the 7·1s. for Professor A. L. Bowley's investigation relating to working-class households in May, 1940. (See Oxford Institute of Statistics *Bulletin No.* 5, 1940.)

[5] The changing age and sex composition of the population would have to be taken into account in a detailed analysis of consumption, but this aspect is assumed to be a minor factor here.

[6] For example, the Oxford Institute of Statistics inquiries, *op. cit.*, the investigations of Liverpool University, of Mr. Charles Madge, etc.

Thirdly, these figures are calculated from retail trade returns based on a sample of Department Stores, Co-operative Societies, Multiple Shops and Independent Retailers all over Great Britain. They can be used, presumably, as an indication of short-term changes in expenditure for Northern Ireland also. However, in wartime a second qualification must be made here. Large-scale evacuation and shift of industry has changed the representativeness of the sample by causing a shift away from the Department Stores and Multiple Shops of the large towns in favour of a host of small independent retailers. The " weight " given in the statistics to the relatively favourable experience of the latter is, therefore, almost certainly too small.

But for all these qualifications, one thing stands out fairly clearly. The volume of food consumed per head of the civilian population has fallen in the first year of the war. We do not know the exact amount of this decrease, but it is likely to have been in the neighbourhood of 12½—17½ per cent.

We can also estimate the fall in total civilian consumption by bringing the White Paper estimate of £3,997 millions for 1938 up to the summer of 1939. A continuation of Clark's series for consumption (1) shows that the money value of civilian consumption increased by nearly 6 per cent. from 1938 to mid-1939 (2). Applying this percentage, we can estimate civilian consumption at approximately £1,057 millions in the third quarter of 1939, whereas one year later civilian consumption totalled £1,084 millions. At 1935 prices (3), civilian consumption for these two quarters were £973 millions and £832 millions respectively. Allowing for changes in civilian population, " real " civilian consumption per head per week fell from 31s. 5d. in the third quarter of 1939 to 28s. 6d. one year later, a fall of 9.2 per cent.

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[1] *National Income and Outlay*, Ch. VII.

[2] As Clark's estimates are derived from Feavearyear's figures for 1932, whereas the White Paper estimates are probably based on later information, there is a discrepancy between the two in absolute terms, but the relative changes should be the same.

[3] Using the price index mentioned previously.

II

The next item in the National Expenditure as given in the White Paper is the £849 millions in 1938 and £3,100 millions in 1940 for government expenditure. This item, however, includes subsidies to industry, and as we are reckoning subsidised goods and services at their market prices, we must regard these payments as additional "transfers" and deduct them from the National Expenditure.[1]

In 1938–9 the sums paid out in subsidies to industry were as follows :—

	(£000's)	
England and Wales :		
Beet Sugar Subsidy	1,753	
Milk (including N. Ireland)	573	
Cattle Fund : Payments to Producers	4,291	
Land Fertility Improvement	1,323	
Oats and Barley (including N. Ireland)	80	
Development Grants to Public Utility Undertakings	730	
Contribution to Agricultural Mortgage Corp.	10	
Agricultural Marketing	28	
Loans to New Undertakings in the Special Areas, etc.	414	
Civil Aviation	1,339	
Wheat Fund Deficiency Payments	9,291	
		19,832
Scotland :		
Milk	80	
Oats and Barley	84	
Agricultural (Marketing, Credits Act, and Securities Organisation)	8	
Annuities under Housing Act, 1914	71	
		243
TOTAL		20,075

In the first three quarters of 1940 approximately £45 millions were expended in subsidies to keep down food prices.

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[1] See J. R. Hicks, "The Valuation of the Social Income,", ECONOMICA, 1940.

Allowing for subsidies, our final figures for net government expenditure are :—

(£m.)	1938	1940 (1)	1940 (2)	1940 (3)
Government expenditure (White Paper) ..	849	558	646	887
Subsidies	−20	−15	−20	−25
Depreciation of government fixed capital ..	−20	−6	−6	−6
Net government expenditure	809	537	620	856

The depreciation item is simply transferred from Private Investment, in which, apparently, it was included in the White Paper estimate.

III

The final figure that we wish to examine is the White Paper estimate for "Net investment, or disinvestment, at home and abroad". In 1938 this item accounted for £210 millions of the National Expenditure. Let us examine it in detail. It is composed of three main groups, private net investment in fixed capital goods, private investment in working capital, and the Balance of Payments.

The gross output of capital goods in 1935 was £665 millions[1] excluding the output of armaments, warships and aircraft.

HOME OUTPUT OF CAPITAL GOODS IN 1935

	(£m.) *Excluding Armaments*	(£m.) *Including Armaments*
General Engineering	145	156
Electrical Engineering	67	67
Shipbuilding	27	46
Railway maintenance and Permanent Way	59	59
Commercial Motor Vehicles ..	18	18
Building and Contracting ..	349	349
	665	695

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[1] Calculated from the final volumes of the 1935 Census of Production.

We can use these figures to estimate gross private investment in fixed capital in later years, using the employment figures in these industries as a basis for extrapolation (except for Commercial Motor Vehicles, where New Registrations are used). In shipbuilding and general engineering distinct cycles can be observed in the current values of gross output per worker over the Census years 1924–30–35, and allowance was made for this in estimating the series from 1935. In addition, gross output in the building and contracting trades was corrected by a specially constructed index number of building costs.

One difficulty of extrapolation lies in the composition of the Ministry of Labour unemployment returns for the engineering industry. Engineers on the railways are included and the numbers involved can be deducted, using the figures given in the Railway returns. But the engineering figures also include engineers making munitions and tanks, and for this reason we must include in the 1935 home output an additional figure for armaments, which is taken, not from the Census, but from the Appropriation Accounts. The unemployment returns for aircraft production are included in the Motor and Cycle trade, and so we cannot disentangle this item at all.

Allowing for net exports of capital goods, home consumption of fixed capital, including repairs, and including armaments but not aircraft, in the year 1938 can be estimated at approximately £910 millions. Of this total, government expenditure on armaments (excluding aircraft) amounted to £137 millions, and repairs and maintenance of private fixed capital to £417 millions. Private net investment in fixed capital was therefore £356 millions in 1938.

Investments in working capital can be determined by the method elaborated by Colin Clark.[1] A special inquiry was made into a random sample of company balance-sheets for the years 1931 to 1940. A preliminary sample of 250 balance-sheets was examined, but only 160 of these were included in the final sample. Net investment in working capital in 1938 can be estimated at £83 millions.[2]

The Balance of Payments item can be estimated by using the Board of Trade figure for invisible items in conjunction with their figure for the Balance of Trade (but excluding silver bullion and specie, which are reckoned as being on capital account). The adverse Balance of Payments in 1938 was £68 millions. The total for " net investment, or disinvestment, at home and abroad " in 1938 then becomes :—

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[1] *Op. cit.*, Appendix III.

[2] See Appendix, Table IV.

	(£m.)
Private net investment in fixed capital	356
„ „ „ „ working „	83
Balance of Payments	−68
Expenses incurred in connection with the investment of capital[1]	90
	461

The White Paper total of £210 millions seems definitely too low here. Our final estimate for 1938 is, then :—

	(£m.)
Personal expenditure (White Paper estimate) ..	3,997
Government expenditure (minus subsidies) ..	809
Indirect taxes	−643
Net investment	461
	4,624

This compares with the White Paper estimate of £4,415 millions.

Ignoring net investment in fixed capital for the moment, our total for investment is as follows :—

	Working Capital[2]	*Fees to Estate Agents etc.*	*Balance of Payments*[3]	*Total*	*Difference from White Paper estimate*
1939 iii	−9	17	(−30)	−22	
iv	−15	16	(−50)	−49	
1940 i	−21	15	(−90)	−96	−6
ii	−30	14	(−120)	−136	+18
iii	−40	13	(−150)	−177	−117

The last column would then represent private net investment or disinvestment in fixed capital. The positive sign of the middle figure is a warning that great reliance must not be placed on figures estimated in this way. However, the trend of the figures seems to be of the order of magnitude one would expect.

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[1] *i.e.* Fees to Estate Agents, Stockbrokers, etc. (see *National Income and Outlay*, pp. 156–7). All estimates for such fees are based on government revenue from Stamp Duties, together with the data given by Clark.

[2] Extrapolated from results of inquiry into stocks.

[3] Estimated : See Oxford Institute of Statistics *Bulletin No.* 1, 1940, and London and Cambridge Economic Service *Bulletin III*, 1940.

APPENDIX

TABLE I.

U.K. MAINTENANCE AND DEPRECIATION. (£m.) FINANCIAL YEARS.

	1930	1931	1932	1933	1934	1935	1936	1937	1938
Schedule A allowances ..	99	109	112	115	118	120	125	133	138
Wear and Tear allowances ..	100	95	92	100	105	118	129	144	157
Railway Renewals and Maintenance	53	48	46	47	48	49	51	53	55
Post Office Depreciation ..	8	8	9	9	9	10	9	10	10
Roads Maintenance	36	36	33	33	34	34	34	35	34
Maintenance of Other Untaxed Property	9	9	9	9	9	9	9	9	9
Other Repair and Maintenance	73	69	65	61	65	67	69	71	73
TOTAL	378	374	366	374	388	407	426	454	476
GOVERNMENT MAINTENANCE .. (i.e., Post Office + Roads + Other Untaxed Property, which is Telegraph and Telephone)	53	53	51	51	52	53	52	53	53
DEPRECIATION TO BE DEDUCTED FROM THE GROSS NATIONAL INCOME .. .. (i.e., Above total *minus* Roads Maintenance)	342	338	333	341	354	373	392	420	442

TABLE II.

WORKING CAPITAL IN THE UNITED KINGDOM, 1931–1939

PER CENT. OF STOCKS TO PAID-UP CAPITAL, AT END OF :—

	1931	1932	1933	1934	1935	1936	1937	1938	1939
I. MANUFACTURE & MINING									
Coal Mining	6·1	5·6	5·3	5·2	4·5	5·1	6·5	6·7	8·2
Iron & Steel and Engineering	21·6	21·9	20·3	21·3	25·8	28·7	32·8	32·1	32·7
Clothing	33·6	32·6	38·9	47·2	50·4	48·8	55·0	59·2	61·6
Chemicals	17·9	17·1	17·5	18·3	19·0	21·5	22·6	22·2	25·5
Boot and Shoe	40·5	38·3	41·5	36·8	37·0	40·8	42·0	38·0	38·8
Leather	20·7	18·5	21·6	21·4	19·5	23·9	26·6	20·5	21·4
Food and Tobacco	47·9	43·7	46·9	39·8	37·6	46·3	47·0	48·9	54·7
Paper	16·1	15·8	16·0	16·4	15·7	16·2	20·4	26·2	22·7
Printing	4·8	4·8	5·0	5·0	5·3	5·6	7·1	7·8	9·3
Distilling	86·0	79·5	74·9	75·0	78·9	85·6	88·0	94·7	86·3
Brewing	6·8	6·2	6·6	6·1	5·7	5·7	6·5	6·7	7·9
Miscellaneous	27·5	31·2	31·0	30·6	27·7	29·2	35·0	33·4	37·9
II. DISTRIBUTION & SERVICES									
Retail Trade	16·7	15·9	15·8	15·9	16·6	18·4	20·4	20·4	24·8
Wholesale Trade	18·5	17·0	18·4	20·3	20·3	21·1	26·9	21·4	22·0
Hotels and Catering ..	4·8	4·8	5·0	5·1	5·7	5·8	6·3	7·2	8·4
Entertainment	0·6	0·5	0·5	0·5	0·5	0·5	0·5	0·5	0·6
Other	2·9	2·7	2·4	2·7	2·1	2·3	2·7	3·0	5·2
Shipping	0·9	1·0	1·0	1·0	1·1	1·2	1·4	1·4	1·8

TABLE III.

STOCKS AT CURRENT VALUES, AT END OF :—

	1931	1932	1933	1934	1935	1936	1937	1938	1939
(In million pounds)									
Manufacture	942	907	929	915	939	1,043	1,142	1,153	1,221
Distribution	472	445	460	486	497	533	632	570	647
Railways..	18	16	15	16	16	18	20	20	21
TOTAL	1,432	1,368	1,404	1,417	1,452	1,594	1,794	1,743	1,889
BOARD OF TRADE PRICE INDEX FOR INDUSTRIAL MATERIALS									
(1930 = 100)	87·4	84·7	90·6	88·5	93·1	103·3	109·1	101·0	124·0
at end of year	—	—	89·5	—	91·3	97·7	—	—	111·4
for previous 6 months ..	87·4	84·6	87·2	89·7	90·1	95·8	112·1	103·5	105·8
average of year									
VALUE OF STOCKS	1640	1615	1550	1600	1560	1543	1645	1725	1521
at 1930 prices (£m.) ..	—	—	*1575	—	*1593	*1630	—	—	*1694

* NOTE.—In years of rising prices the value of stocks at the end of the year is revalued by use of the price index for the previous six months.

From the data in Table IV we can calculate, using Clark's method (*op. cit.* Appendix III), net investments and disinvestments in working capital and the additions to be made to published Tax assessments. The latter figures are of use, in National Income studies, only when the "addition of incomes" approach is used.

TABLE IV.

Calendar Years.	Net Investment in Working Capital (£m.)	Additions to Published Assessments, because of writing-down of Inventories (£m.)
1932	−21	44
1933	−35	nil
1934	+22	33
1935	− 6	nil
1936	+35	nil
1937	+17	nil
1938	+83	135
1939	−33	nil

The Inaccuracy of Expectations

A STATISTICAL STUDY OF THE LIVERPOOL COTTON FUTURES MARKET, 1921/2–1937/8

By J. C. R. Dow

1. The futures price of a commodity is so closely connected with expectations as to its price in the future, that it is possible to make an estimate of how accurate these expectations are. The significance of such an estimate, however, can only be appreciated if the structure of prices in a futures market is understood. This structure is somewhat complicated.

The price of every futures contract must satisfy the two conditions expressed in the following equations:

$$\text{(i)}\quad FP - CP = i + c' - q$$

$$\text{(ii)}\quad EP - FP = r$$

where CP is the current or spot price of the commodity, FP is the price of the futures contract with a certain period to run before maturity,[1] i and c' are the marginal interest and carrying charges for holding stocks for this period, and q is the marginal yield in convenience from holding stocks of this size for this period; and where EP is the representative expected price, and r the market risk premium.

2. A fuller discussion of these equations will be found in recent numbers of the *Review of Economic Studies*.[2] There it was shown that the risk premium might take a negative sign either (i) if the risks that were to be hedged were predominantly *negative* risks, i.e. the sort of risks a man would face who had sold forward more than he owned; or (ii) if, when there was both buying and selling of futures by speculators, the bears were more averse to bearing risks than the bulls, and sufficiently so to outweigh the risk-aversion of the hedgers. In a futures market for a raw

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[1] That is, there is a certain period before the time when deliveries of the commodity must be made under the contract.

[2] Nicholas Kaldor, "Speculation and Economic Stability," pp. 6–7, in Vol. VII, No. 1; J. C. R. Dow, "A Theoretical Account of Futures Markets," and also "A Symposium on the Forward Market," both in Vol. VII, No. 3.

material of which considerable stocks are carried, the first condition would hardly be likely. The second condition, however, might sometimes be realised: so that, while as a rule the market risk premium would be positive, we may never be sure that the premium at a particular date is not negative.

The size of the risk premium is, however, unlikely to be large. It will depend partly on the uncertainty with which expectations are held. Some indications of what this would be is given by the extent to which prices change over any period. In the Liverpool cotton market the average degree of price-change in one month is 5.5 per cent.[1] The risk premium can only be guessed; but even a fifth of this, or one per cent. of the futures price, would seem a high price to pay for avoiding this degree of uncertainty. Probably then, the futures price will be below, but may on occasion be above the expected price, by no more than this amount. When therefore the accuracy of expectations is calculated, allowance must be made for this: thus the estimate must be approximate, but the estimate will not be invalidated thereby.

For longer expectation periods, the degree of uncertainty with which expectations are held, and consequently the risk premium, will increase: the risk premium is not directly a function of the length of the expectation period, but of the degree to which prices may change in that period. Since the price-changes in successive months tend to some extent to cancel out, the premium should increase less than proportionately with the length of the period of expectation, even where equal price-changes were to be expected in each successive month.

3. Were there a futures market in an extremely perishable commodity, expectations relating to different dates might bear no relation to each other. Where stocks are held, however, the different expectations are not autonomous in this fashion. In a market like that of cotton, where stocks must be held through the season, expectations relating to the same season are part of one interrelated system of expectations (and on occasion the system may stretch over two or more adjacent seasons).

It will be simplest to set out first the way in which, at any time, the *futures* prices relating to different dates in the future must be related to the current price at that time. The relations can be set out in this way:

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[1] The average for the seasons 1919–29—1937–8: it ranged from 0 to over 20 per cent. on occasion. During this period the average *ex post* one-month risk premium was about zero. This however has no necessary connection with premium *ex ante*.

$$FP_1 = CP + (i + c' - q)_1;$$

$$FP_2 = CP + (i + c' - q)_1 + (i + c' - q)_2, \text{ and so on};$$

where FP_1 is the futures price relating to one month ahead, and $(i + c' - q)_1$ the net cost of carrying stocks for the next month; and where FP_2 is the futures price relating to two months ahead, and $(i + c' - q)_2$ the net cost of carrying stocks over the course of the next but one month.

If there were no marginal variation in $(i + c' - q)$, the futures prices relating to one season would be rigidly linked together. An expected fall in the demand for the commodity in any single month would lead to a slight fall in the futures price for this month, but an equal fall in all the other futures prices, as well as in the current price. The whole system of prices would fall until it could be expected that the consequent increase in demand in the other months would offset the original fall in demand.[1]

To talk about futures prices being adjusted to each other in this way is however a shorthand way of talking. The futures prices will change only if there is a change either in market expectations or in the market risk premia. The factors affecting the various risk premia have already been mentioned. The relations of the premia for bearing the risks of the various periods are unlikely to be affected much by the redistribution of the stocks over time; so that the adjustment really requires that the price expectations should change until they bring the futures prices into the relation stated above.

As it is, the relation is more complicated, since the redistribution of stockholding over time affects the marginal cost of carrying the stocks for the various periods. The rigidity of the system is however sufficiently great to cause the spot price and the various futures prices to change in very much the same way.

It is, of course, only because all the prices do move in much the same way that the futures market can be used to hedge the risks of stockholding.[2] Ideally a futures market should reflect perfect expectations, and procure the optimum adjustment of supply to demand over time. In this case, the spot price would not change much from month to month; and the futures market would probably not be used at all, since it would not be profitable to hedge against price risks.[1] In spite of this element of contradiction, however, it is not contradictory that futures should both reflect perfect expectations and also be perfectly efficacious as hedges. There is generally a degree to which prices must change if expectations are to be verified:

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[1] If as a consequence prices were depressed exceedingly, and the carrying of speculative stocks became profitable, the carryover of stocks, as well as the increase in demand in the other months of the year, would go to offset the original fall in demand.

[2] See what is said on the "efficacy of hedging" in the article on "A Theoretical Account of Futures Markets," loc. cit.

$$EP_1 = FP_1 + r = CP + (i + c' - q)_1 + r$$

If the set of expectations that had fixed this futures price was adequate, the current price at the second moment of time would be the same as the expected price at the first. Selling futures at the first moment would then also provide a perfect hedge.

When, as in fact, expectations are not perfect, the system of futures prices set up at the beginning of the season will differ more or less widely from the series of current prices that are actually realised through the season. This failure can be measured directly by direct comparison; it can also be measured indirectly by looking at the changes in the current price that actually occur. In this second case, however, the standard of perfection is not easily known. It will be apparent that the current price does not change in the regular fashion that is expected of it: but the precise way in which it should change depends on the relative sizes of i, c' and q, for the various periods, and that is not easily gauged. The degree to which prices change must therefore be closely connected with the degree of inaccuracy of expectation calculated below, though it will not be identical.

It also seems desirable to measure how successful speculators are in adjusting their expectations to changes in data. Both present and future prices are themselves determined by expectations, which are the best that can be made on the data available at the time. In this connection it is therefore meaningless to try and measure the extent to which *changes* in price are expected: one cannot imagine the direction and extent of errors in foresight themselves being foreseen. It is however possible to show how the accuracy of expectation changes through time; and how the price of a given futures contract approaches its final value. In a shifting world it is hard to find a stable vantage point from which its instability may be measured: thus the final value of a futures contract cannot claim final rightness, but may subsequently be found to have been otherwise than it should have been. Nevertheless it seems best to take it as the standard against which earlier futures prices are to be compared. Otherwise the task would be endless; for the ramifications of foresight extend further than they can be profitably pursued.

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[1] See what is said on the "gain from hedging," in "A Theoretical Account of Futures Markets", loc. cit.

4. The statistical part of this paper is confined to a study of the futures prices of American cotton in the Liverpool cotton market during the seasons 1921–2 to 1937–8.

The figures for 1921–2—1929–30 are from the market reports in the *Manchester Guardian Weekly*; and are the prices ruling at 12.15 each Wednesday. From 1930–31 to 1937–8 the figures are from the weekly bulletin of the Liverpool Cotton Association; and are the closing prices each Friday. Since there is no *direct* comparison of the two sets of figures, there should be no error involved.

These weekly figures were arranged in months, and a monthly average was calculated. It was these monthly averages that were used in the following calculations. Since the prices in the market are changing each hour and each day, even a weekly figure can claim to be no more than roughly representative. The fact however that monthly figures were used should not affect the accuracy of the *average* results obtained; though the deviations from the average results would have been greater had more frequent intervals of measurement been chosen.

5. As an example, the prices of the October, 1921, futures contract are given in Table I. The series starts in November, 1920, and continues until October next year, in which month this contract comes to the end of its period of currency.

TABLE I

PRICES OF OCTOBER, 1921, CONTRACT.

Monthly average figures for November, 1920, to October, 1921.

	11	10	9	8	7	6	5	4	3	2	1	0
Price (pence per lb.) ..	12·47	10·48	9·99	9·28	7·91	8·34	8·53	8·42	8·53	9·27	15·30	13·11
Percentage Deviation from Final Price ..	4·9	20·1	23·8	29·2	39·8	36·4	34·9	35·8	34·9	29·3	16·7	—
Decrease (+) or Increase (–) in Deviation ..	—	–15·2	–3·7	–5·4	–10·6	3·4	1·5	–0·9	0·9	15·6	12·6	(16·7)

The percentage deviation of each of these figures from the final price was then calculated. This gives an indication of the inaccuracy of expectation, over expectation periods of from eleven months to one month. In each year the contracts mainly dealt in are the "active" months, October, January, March, May, and July. The deviations were found for these months in each of the seventeen years under consideration.

6. The average results for each expectation period are summarised in Table II. For a period of expectation of eleven months, the inaccuracy of expectation as shown by these average deviations is 20 per cent. It decreases fairly steadily as the period of expectation becomes shorter; until, in the last month before maturity, there is still an adjustment of about 5 per cent. to be made. To amplify these results, the frequency distribution of these deviations is also shown.

Table II

THE INACCURACY OF EXPECTATION, 1921–2—1937–8

As Shown by Deviations of Futures Prices from Final Price

		Without Allowance for Risk Premium											With Allowance		
Expectation Periods, in Months		11	10	9	8	7	6	5	4	3	2	1	11	7	3
Average Deviation, Percentages		20·0	18·6	16·9	15·6	14·9	14·5	12·8	12·2	9·8	7·9	5·3	20·8	15·4	10·3
Frequency Distribution :															
Percentage Deviations	0–5	17	16	22	20	19	22	21	20	33	34	50	16	17	28
	0–10	26	27	31	38	39	35	42	43	49	60	74	27	39	48
	0–15	36	40	42	47	51	49	53	59	64	77	82	36	50	64
	0–20	46	47	54	58	62	63	63	72	76	79	84	47	62	75
	0–25	60	62	65	65	70	71	78	77	81	82	84	54	69	80
	0–30	66	66	75	73	74	77	80	78	82	83	84	65	73	82
	0–35	70	73	77	78	78	80	82	83	84	85	85	68	77	83
	0–40	77	78	80	79	82	83	83	84	85			72	80	84
	Total	85	85	85	85	85	85	85	85				85	85	85
Median Deviation, Percentages		18·2	16·8	15·2	12·6	11·5	12·7	10·4	9·9	8·1	6·7	4·0	18·0	11·6	8·7

7. These deviations are however only an approximate index of the inaccuracy of expectation. The futures price is not the same as the expectation, but different from it and probably less by the amount of the risk premium. The

above averages were therefore recalculated after allowance had been made for this. For eleven-month expectations a premium of 4 per cent. was allowed; for seven-month expectations, one of 3 per cent.; and for three-month, one of 2 per cent. This is to allow a premium about a fifth as large as the degree of inaccuracy that is actually incurred over expectation periods of these lengths. The allowance increases the size of the positive deviations, but decreases that of the negative ones. Since the distribution of positive and negative terms is fairly random, the average results are only affected to a slight extent. These allowances would seem to be if anything generous; a less allowance would have affected the average less.

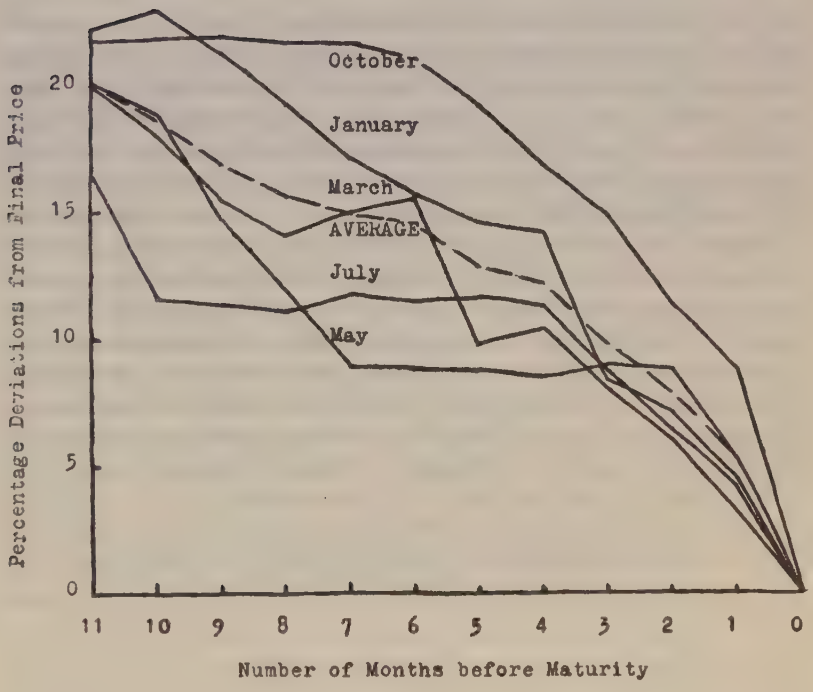
The adjustment may, however, be criticised for being too regular. In the first place, it is not certain that the premium is always positive: but it is impossible to discover those occasions when it is not. It would, however, probably be lower during the spring and summer, because at the end of the crop season there are less stocks to be carried and hedged; and because prices change less then, so that the "objective" risks are less. A season of relatively stable prices in the same way might also work to lower the speculators' estimate of the risks during the next season. It may be, too, that speculators are more averse to bearing the risks of the further future, not because there is any reason to believe the risks are greater then, but merely because they are more remote from the present. The distribution of negative and positive deviations is however so random, that adjustment for each or all of these factors would affect as many items one way as the other, and leave the average little changed. The adjustment made in the tables seems therefore as much as it is necessary to make; and the change so made in the average results therefore indicates the probable degree of approximation in the estimate of the inaccuracy of expectations.

8. In the table below the average deviations are shown separately for the five active months. It will be seen here and more clearly on Chart I that on the whole the futures gradually approach their final value, though with some irregularity. The cotton crop comes "into sight" during the five months from September to January. The prices in this period appear to be harder to foresee than those of other months, for the October and to a less extent the

CHART I: AVERAGE MOVEMENT OF ACTIVE-MONTH FUTURES

for Each Month of their Currency

Average of Seasons, 1921/2-1937/8



January futures show a consistently higher average deviation.

TABLE III

AVERAGE DEVIATION OF FIVE ACTIVE MONTHS FUTURES FROM THEIR FINAL PRICE, 1920–1—1937–8

Expectation Period (in months)	11	10	9	8	7	6	5	4	3	2	1
October ..	21·7	21·8	21·9	21·6	21·6	21·0	19·2	16·8	14·9	11·3	8·9
January ..	22·2	22·9	21·2	19·2	17·1	15·6	14·6	14·2	8·4	7·1	4·5
March ..	19·9	18·0	15·4	14·1	14·9	15·5	9·8	10·4	8·0	6·0	3·7
May ..	20·0	18·8	14·7	11·9	8·9	8·8	8·7	8·5	9·0	8·8	5·3
July ..	16·4	11·6	11·4	11·1	11·8	11·5	11·7	11·3	8·8	6·4	4·3
Average ..	20·0	18·6	16·9	15·6	14·9	14·5	12·8	12·2	9·8	7·9	5·3

9. The expectations of the various expectation periods should not be thought of as detached observations and as separate from each other. The task of foresight is a continuous one, and the gradual movement towards the final price is only part of an unceasing adjustment. Looked at at each point, it is a failure of expectations that there should be these deviations from the final price; but, regarded as a process, it is a relative success that the deviations should decrease, and that the adjustment of expectations should be in the right direction. The third row of figures in Table I shows the adjustments in expectations. An improvement in the percentage deviation is shown as positive, a worsening as negative. The average results for each of the active months are shown in Table IV. (These are the same as the *differences* between the figures of Table III.)

TABLE IV

THE ADJUSTMENT IN EXPECTATIONS, 1920–1—1937–8,

As shown by the change in deviation of futures prices from final price

	11	10	9	8	7	6	5	4	3	2	1
October ..	–0·1	–0·1	0·3	0	0·6	1·8	2·4	1·9	3·6	2·4	(8·9)
January ..	–0·7	1·7	2·0	2·1	1·5	1·0	0·4	5·8	1·3	2·6	(4·5)
March ..	1·9	2·6	1·3	–0·8	–0·6	5·7	–0·6	2·4	2·0	2·3	(3·7)
May ..	1·2	4·1	2·8	3·0	0·1	0·1	0·2	–0·5	0·2	3·5	(5·3)
July ..	4·8	0·2	0·3	–0·7	0·3	–0·2	0·4	2·5	2·4	2·1	(4·3)
Average ..	1·6	1·7	1·3	0·7	0·4	1·7	0·6	2·4	1·9	2·6	(5·3)

These figures, however, seem to exaggerate the certainty of an *improvement* in the adjustment of expectations. The last figure for each futures contract is of necessity positive:

the change in price in the last month must always be in the right direction, if the average price of the last month is taken as the standard of rightness. Neglecting these figures, the adjustment was in the wrong direction in as many as 40 per cent. of the cases. The distribution, however, is very irregular, and yields little to further analysis. There hardly seems a tendency for the adjustment to be more frequently right as the contract approaches maturity; except that, in the last month, the average is 74 per cent. in the right direction. No more are seasonal influences very marked. The only thing that does appear is that for those contracts that refer to the period between May and October (that is, to the turn of the crop season, when the size of the new crop has an important influence on the price), the average deviation remains remarkably constant from the beginning of October to the end of March. This is shown on Chart II. This constancy is not evident however in the individual series that make up the average. Perhaps the explanation is that, while there is speculation during this part of the year about the potentialities of the next season's crop, the information on which it is based is so uncertain that it is as often misleading as useful.

10. This paper has tried to show that the inaccuracy of expectations may be estimated from the prices of futures contracts, and that the probable error of the estimate is not large. In the Liverpool cotton market, speculation is not very successful in forecasting prices in the future. On the other hand, it is not completely wide of the mark; changes in expectations cause a readjustment of the system of prices in the market, and these readjustments tend on the whole to be in the right direction rather than not.[1]

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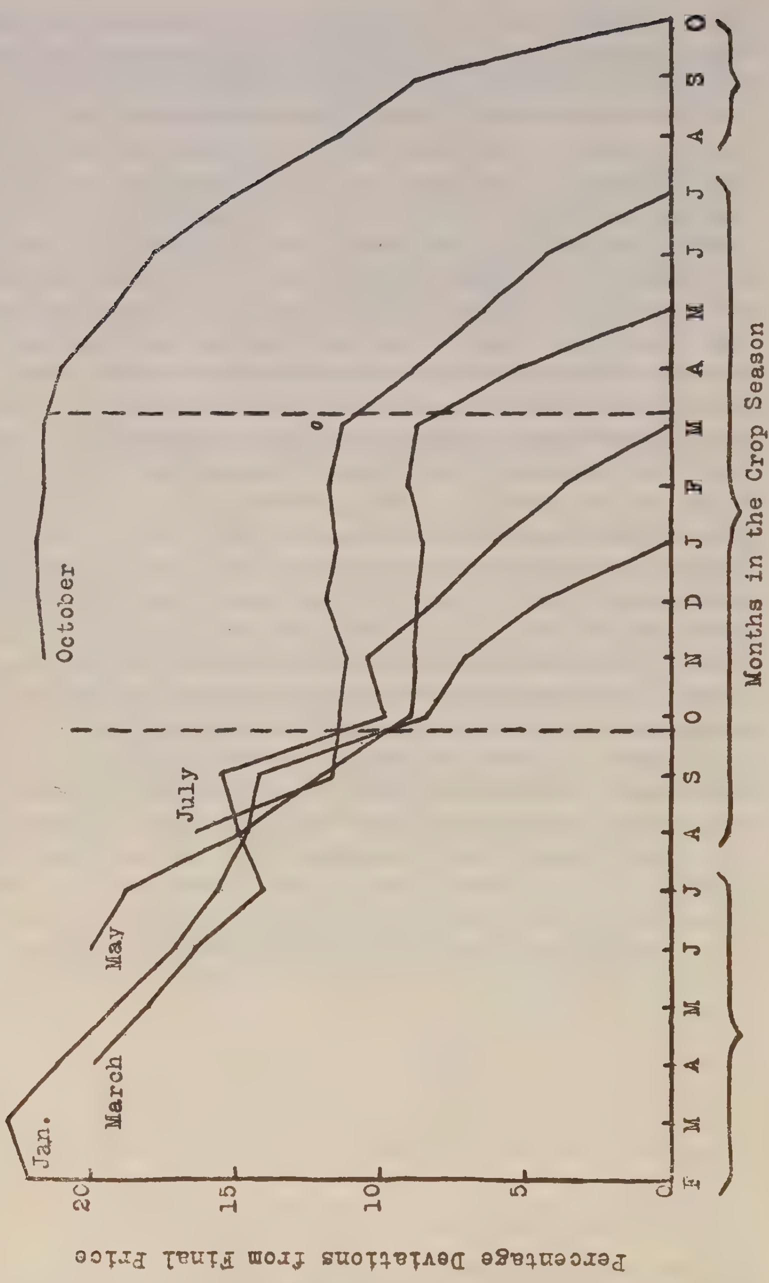
[1] This study was undertaken while Drummond Fraser Research Fellow in the University of Manchester. I owe very much to the members of the Department of Economics there, especially to Prof. J. R. Hicks and Dr. H. W. Singer, for their sympathy and criticism.

CHART 11: AVERAGE MOVEMENT OF ACTIVE-MONTH FUTURES THROUGH THE SEASON

Average of Seasons, 1921/2-1937/8



APPENDIX.

Active-Month Futures, 1921–2—1937–8

Percentage Deviations from Final Price.

1. OCTOBER FUTURES

Number of Months from Maturity

	11	10	9	8	7	6	5	4	3	2	1
1921	4·9	20·1	23·8	29·2	39·8	36·4	34·9	35·8	34·9	29·3	16·7
1922	20·3	21·8	24·5	26·8	24·2	22·8	12·8	5·9	3·3	5·5	4·6
1923	23·9	22·8	17·7	15·8	14·3	17·9	22·6	19·5	21·8	20·5	17·7
1924	17·3	17·4	20·0	15·3	6·7	4·8	7·2	9·5	10·6	10·8	4·4
1925	13·2	12·6	13·2	17·8	20·7	16·0	5·9	8·2	13·3	10·3	9·7
1926	50·0	42·2	42·1	41·0	34·0	32·4	36·6	30·9	33·8	34·6	33·8
1927	35·7	37·7	34·3	30·8	30·1	28·9	22·2	18·5	13·3	5·1	2·8
1928	1·3	1·8	5·9	8·0	3·7	1·4	8·2	8·2	11·0	1·0	6·6
1929	1·3	4·2	3·5	4·5	8·3	6·0	0·2	·09	1·1	1·6	2·1
1930	71·9	68·8	65·9	52·7	45·2	47·7	41·0	30·1	24·2	14·3	5·4
1931	44·9	30·9	29·7	40·3	38·9	30·7	21·7	11·9	14·2	12·2	11·0
1932	13·6	7·8	5·2	1·9	3·2	16·0	21·2	26·4	17·7	2·4	10·8
1933	0·4	4·9	3·8	8·1	6·2	5·6	8·7	12·1	14·5	6·0	1·5
1934	22·9	22·9	15·6	6·4	7·8	12·4	12·6	5·6	0·1	3·4	2·2
1935	2·1	6·1	8·2	6·6	4·8	2·7	0·2	2·7	0·3	5·0	6·4
1936	9·6	10·3	16·4	18·5	17·8	15·4	15·1	9·7	1·8	5·5	3·4
1937	34·9	39·0	42·5	44·2	61·0	59·5	54·5	49·7	37·9	24·1	11·8
Average ..	21·7	21·8	21·9	21·6	21·6	21·0	19·2	16·8	14·9	11·3	8·9

2. JANUARY FUTURES

	11	10	9	8	7	6	5	4	3	2	1
1922	0·9	23·5	19·0	16·8	17·5	17·2	10·9	31·0	20·7	33·7	4·0
1923	38·7	37·0	35·2	27·0	21·7	19·9	21·0	20·5	16·7	7·7	7·0
1924	31·4	30·2	33·2	37·2	35·1	37·0	34·8	24·8	18·6	0·5	0·7
1925	21·1	12·1	8·8	11·9	14·7	16·4	17·8	2·4	6·8	4·5	1·6
1926	28·9	31·7	26·7	16·6	18·4	24·0	20·9	20·2	9·6	1·3	3·1
1927	36·3	32·2	28·2	32·2	26·6	29·3	29·7	30·0	0	2·3	6·3
1928	23·0	22·3	20·9	13·7	9·5	3·2	10·6	11·4	11·0	10·7	10·2
1929	9·3	5·3	0·3	6·3	6·2	8·8	2·7	8·5	2·7	0·4	1·7
1930	12·3	16·3	14·1	7·9	8·8	9·0	9·5	10·6	8·7	2·1	3·3
1931	61·5	53·6	55·5	48·5	36·8	30·8	22·0	12·6	7·5	10·9	9·4
1932	21·4	20·4	13·4	5·8	2·9	0·6	23·2	23·2	15·6	9·5	4·5
1933	10·8	5·4	8·8	14·2	19·8	10·2	11·0	19·0	6·2	4·8	1·0
1934	3·1	11·5	9·0	2·3	5·5	8·0	·02	4·2	6·2	10·8	10·4
1935	8·9	10·5	15·1	15·4	8·7	3·8	0·1	1·4	3·5	4·1	1·0
1936	10·2	2·8	0·5	3·3	0	2·1	3·5	4·0	1·8	6·4	5·4
1937	22·2	21·7	19·7	19·7	14·6	7·3	10·3	8·3	4·5	6·2	4·0
1938	37·3	53·5	52·2	47·6	43·2	36·9	20·5	9·0	2·1	5·5	3·2
Average ..	22·2	22·9	21·2	19·2	17·1	15·6	14·6	14·2	8·4	7·1	4·5

3. MARCH FUTURES

	11	10	9	8	7	6	5	4	3	2	1
1922	16·3	15·3	15·6	15·0	9·3	29·4	19·3	33·9	4·7	0·9	5·4
1923	37·6	30·6	25·7	23·7	24·6	24·1	20·8	12·8	11·7	5·1	1·3
1924	21·9	26·5	24·1	26·1	23·5	12·0	5·5	18·1	19·2	18·7	9·2
1925	0·9	1·9	4·6	6·4	8·0	5·4	1·5	3·5	6·1	7·4	3·9
1926	35·8	25·6	27·4	33·6	30·5	29·8	18·4	9·5	4·3	7·5	5·9
1927	19·8	23·7	18·7	21·6	22·2	22·4	5·2	7·5	11·0	5·5	0·7
1928	11·8	14·8	10·8	4·6	4·3	12·3	7·9	5·1	0·3	2·4	6·5
1929	3·7	2·8	2·6	5·0	5·6	11·2	5·9	3·7	1·3	2·7	3·6
1930	29·9	23·3	24·3	24·5	25·3	26·7	24·8	17·3	18·9	14·6	4·1
1931	43·0	36·6	26·1	21·0	12·5	4·3	0·3	3·4	7·7	7·7	0·2
1932	13·4	6·0	2·5	0·6	21·3	22·8	15·7	10·2	6·1	2·3	4·0
1933	5·9	11·0	12·9	7·3	14·3	22·0	8·6	7·3	1·4	2·2	2·9
1934	17·1	7·0	4·2	1·8	8·6	12·8	14·7	19·0	18·8	9·7	0·8
1935	9·7	10·2	3·1	2·3	6·5	4·3	1·9	1·4	4·8	6·2	5·7
1936	0	3·0	0·7	1·3	4·2	4·2	1·5	5·3	4·7	1·0	2·7
1937	24·0	24·0	19·3	12·5	15·2	13·6	9·8	11·5	9·1	5·7	4·6
1938	47·3	43·0	38·9	32·9	17·4	6·5	4·3	7·5	5·5	2·4	0·6
Average ..	19·9	18·0	15·4	14·1	14·9	15·5	9·8	10·4	8·0	6·0	3·7

4. MAY FUTURES

	11	10	9	8	7	6	5	4	3	2	1
1922	23·8	24·0	18·8	13·4	4·8	18·9	7·1	10·5	15·4	11·3	12·0
1923	18·4	16·6	17·0	16·7	13·1	4·5	3·3	3·8	8·5	9·9	4·9
1924	27·8	29·6	27·2	25·1	9·9	12·2	13·7	13·6	4·9	4·3	0·8
1925	16·8	19·1	21·3	6·9	11·2	9·3	6·5	5·2	9·1	13·3	7·5
1926	24·2	30·4	27·6	26·7	15·8	6·8	1·6	3·6	2·4	3·5	3·8
1927	4·7	7·5	8·0	8·3	15·5	17·5	20·4	15·5	11·1	10·5	9·6
1928	17·8	12·0	14·0	3·1	1·1	4·2	7·9	10·8	4·6	9·4	5·5
1929	10·0	12·4	1·5	4·4	0·7	3·3	6·1	4·8	4·6	9·0	6·1
1930	22·8	23·1	24·1	25·3	28·9	16·7	18·4	13·8	3·8	1·1	1·0
1931	43·8	38·1	29·0	20·2	15·6	19·5	6·8	6·4	15·0	14·2	7·2
1932	20·9	23·5	3·1	3·8	4·7	11·0	14·8	19·0	27·2	21·4	6·3
1933	28·8	20·4	2·2	4·1	7·6	8·6	13·5	13·0	17·3	15·0	12·3
1934	2·4	4·9	2·4	6·4	8·8	13·6	13·6	4·4	6·8	5·4	0·2
1935	4·4	0·8	4·9	2·7	0	0·5	2·9	4·3	3·3	2·3	3·3
1936	3·9	1·9	7·1	6·8	1·5	1·8	1·0	4·8	6·8	4·8	0·6
1937	16·6	9·7	12·2	11·0	7·2	9·0	6·2	2·8	1·3	3·8	3·9
1938	52·7	45·8	29·3	17·8	5·1	2·4	4·9	8·0	11·6	10·7	5·6
Average ..	20·0	18·8	14·7	11·9	8·9	8·8	8·7	8·5	9·0	8·8	5·3

5. JULY FUTURES

	11	10	9	8	7	6	5	4	3	2	1
1922	27·9	1·1	8·9	4·5	18·5	21·4	25·1	21·9	22·0	12·3	4·0
1923	19·8	19·7	14·2	8·4	7·0	0·3	4·2	5·8	0·9	4·5	1·7
1924	29·3	13·1	10·7	11·1	12·6	12·3	3·9	8·3	3·1	2·3	2·3
1925	10·6	1·7	1·9	0·6	1·4	2·0	1·4	5·2	0·2	7·1	4·5
1926	32·0	30·9	19·5	10·2	4·9	6·2	5·0	0·8	1·7	1·7	2·0
1927	3·7	3·6	23·8	25·5	27·8	23·5	19·9	18·8	17·8	9·8	6·1
1928	6·9	0·5	4·6	7·6	10·6	14·0	17·2	12·8	8·8	3·3	3·4
1929	0	5·7	0·9	1·7	4·4	3·2	3·5	7·7	4·8	1·6	1·0
1930	39·8	41·0	39·6	32·1	34·2	29·2	18·1	12·0	16·8	11·3	2·4
1931	33·8	25·0	20·6	24·6	12·0	11·4	20·2	19·2	12·0	4·2	4·4
1932	5·2	5·9	2·3	8·1	11·1	14·7	22·9	17·0	2·0	4·5	10·4
1933	5·5	0·3	11·4	12·3	16·9	16·1	20·2	18·4	15·7	4·6	1·7
1934	14·3	18·0	20·3	24·3	24·3	16·7	7·2	8·6	12·7	12·9	5·9
1935	4·2	2·0	0·9	1·5	2·3	3·5	2·1	3·5	4·5	2·0	3·9
1936	17·8	13·1	12·5	9·9	10·8	16·3	18·3	16·8	13·8	13·1	7·8
1937	6·2	5·3	1·4	3·0	0·2	3·2	5·1	11·3	11·9	7·7	3·9
1938	20·9	10·8	0·8	3·9	1·7	1·4	5·2	4·3	0·2	5·8	7·2
Average ..	16·4	11·6	11·4	11·1	11·8	11·5	11·7	11·3	8·8	6·4	4·3

A Note on the Theory of Investment

By G. B. Sanderson

The comparison of investment opportunities and the allocation of available funds among these opportunities has generally been considered solely with regard to rates of discount and the comparison of present values. But just as valid for comparing investments and placing funds among them is a concept developed by Professor Irving Fisher and called by him " the rate of return over cost ".[1] The aim of this note is to reconsider part of the theory of investment and to place within this framework Professor Fisher's concept. With the aid of diagrammatic illustration the relationship of " the rate of return over cost " to the more customary theory using rates of discount and present values will be shown.

For investment theory it is necessary to determine how an individual may decide upon those fields of activity that are suitable to him for investment; how he may compare these investment opportunities; and how he will then allocate his own funds and those he may borrow among the opportunities selected. The treatment of the investor's problem will be dealt with in three parts. Part I will deal with some of the considerations that will affect the judgment of a prospective investor in selecting the kinds of investment and the fields of activity with which he would prefer to be connected. In Part II the comparison of investment opportunities and the allocation of available funds among them will be discussed on the simplifying assumption that the investor has available for investment a certain sum of money and is prevented from augmenting this sum by borrowing. Finally in Part III the same analysis will deal with a situation in which the individual may borrow funds for purposes of investment.

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[1] See I. Fisher, *The Nature of Capital and Income* and *The Theory of Interest.*

I

The Selection of Eligible Fields of Investment

In selecting suitable investments a prospective investor will be influenced first by certain psychological preferences for some types of investment over others. Thus, for instance, a pacifist may wish to avoid investing in war industries; or a teetotaller may prefer not to be connected with brewery or distillery securities. These preferences may not in all cases prohibit consideration of certain investments, but may have the effect of lessening the value to the investor of the returns expected from particular investments which he would rather omit from his investment portfolio. Secondly, each investor will have preferences as to risk-bearing which will influence the type of investments to be compared. There are certain fields of investment of a hazardous nature which may hold out prospects of unusually large returns if successful, but on the other hand there may also be great possibilities of loss. Some investors will prefer to avoid this type of investment. A third important factor influencing the type of investment to be chosen is the advantage offered by certain investments in providing the service of liquidity or the availability[1] of cashing in on part or the whole of the investment in case some unforeseen contingencies occur, or more profitable opportunities for investment become evident. Such availability of capital is a means of lessening the risk attaching to any investment. The investor will select those investments giving the degree of marketability of capital that he believes necessary for possible contingencies, or desirable, in order to take advantage of possible better opportunities for investment elsewhere. Finally, an investor is limited by a fourth condition to investments within the scope of his possibilities of securing funds.

Assuming a potential investor has certain given preferences as to risk-bearing and as to approved types of investment, and that, firstly, he has a certain sum of money available for investment which cannot be increased by borrowing as in Part II, or that he has various possibilities of borrowing additional funds for investment, as treated in Part III, then the problem becomes one of comparing the relative attractiveness to him of the investment opportunities at hand and allocating the funds available among those which seem to be the more favourable.

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[1] See F. W. Paish, "Capital Value and Income," Economica, November, 1940, where indifference curves are drawn as between an investor's desire for marketability of capital and annual income yield.

II

THE COMPARISON OF INVESTMENTS AND THE ALLOCATION OF FUNDS AMONG THEM WHEN THE INDIVIDUAL IS LIMITED TO INVESTING A CERTAIN GIVEN SUM OF MONEY

There are three features to each investment opportunity of those selected for consideration, which will influence the comparisons of a prospective investor. He will prefer a flow of net receipts[1] which will conform to his requirements for funds at certain periods of time. Secondly, he will prefer to receive the largest flow of net returns[1] available. Thirdly, he will prefer to invest his funds in such a manner that the degree of riskiness in securing the expected returns is at a minimum. Now it has been stated in Part I that risk was a factor which may prohibit consideration of certain investments according to the preferences of an investor as to risky or non-risky investments in general. But special cognizance must be taken of the various risks appertaining to the types of investment decided upon.

Postponing time-preference for later consideration, it is proposed to consider first the methods of comparing the lucrativeness of various investments and how allowances may be made for different degrees of risk. Comparisons may be made by two methods. The first method uses a concept called by Professor Fisher[2] "the rate of return over cost". This is defined as the rate which, employed in computing the present worth of all the net returns expected to result from a certain amount of initial investment, will make this calculated present worth equal to the sum to be invested.[3] If the amount to be invested is "k" and the expected net returns at the end of years 1, 2, . . . n, be called $a_1, a_2, \ldots a_n$, and " i " is the rate of return over cost which is unknown, the equation

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[1] Net receipts, or net returns, for a corporation are defined as the expected amount of dividends to be received; for a single proprietorship or for a partnership, the net receipts are defined as the anticipated surplus from the gross receipts for a period, remaining for consumption by the individual or partners after the direct charges have been met and those reserves and appropriations made which seem most suitable.

[2] I. Fisher, op. cit., see for instance *The Theory of Interest*, p. 168.

[3] The same concept is also used by K. E. Boulding under the name of the "internal rate of return" (ECONOMICA, 1936, pp. 204–5, "Time and Investment"). See also M. Kalecki, *Essays in the Theory of Economic Fluctuations*", p. 95, where his "prospective rate of profit" is defined as "that rate at which the series of returns must be discounted in order to obtain the amount invested". See also J. M. Keynes, *The General Theory of Employment, Interest and Money*, p. 135, where this concept is called "the marginal efficiency of capital".

$$k = \frac{a_1}{1+i} + \frac{a_2}{(1+i)^2} + \ldots + \frac{a_n}{(1+i)^n}$$

may be solved for " i ". If " k ", the amount to be invested, represents the total to be invested in the present, then " i " will be an *average* rate of return.

It is necessary to examine more closely how an estimate may be made of the probable net receipts for each period which are expected to result from the prospective investment. This estimate can only be a rough judgment of the most probable costs and receipts for each period. But in addition to a judgment of the mathematical probability of receiving these periodical net returns, some allowance must be made for the investor's view of the differences in the *risk* attaching to these estimates. In calculating rates of return risk will be taken into account by applying to the estimate of the most probable receipts in each period, a " caution-factor "[1] the size of which depends upon the attitude of the investor towards risk taking and the degree of uncertainty attached to the estimate. It is likely that, as the receipts extend further into the future, the caution-factor will increase in consequence of the greater degree of uncertainty connected with future payments and receipts.[2, 3] For the purpose of this note it will be convenient to widen the more commonly accepted definition of the " caution-factor " to account for another factor which arises out of the possibility that when a number of investments are under consideration the *aggregate* risk can be diminished by diversifying or balancing the investment portfolio. Therefore, as a greater proportion of an investor's funds is placed in any single investment or class of investment, there is an increasing risk because, in the event of expectations proving to be mistaken, the loss is greater. By including such considerations in the " caution-factor ", the caution-factor will increase, not only as receipts extend into the

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[1] See I. Fisher, op. cit., and M. Abramovitz, *Price Theory for a Changing Economy*, p. 80.

[2] If the caution-factor in periods 1, 2, . . . n, is $C_1, C_2, \ldots C_n$, then the equation above could be written as follows:

$$K = \frac{C_1 a_1}{1+i} + \frac{C_2 a_2}{(1+i)^2} + \ldots + \frac{C_n a_n}{(1+i)^n}.$$

[3] Dr. G. Preinreich in *The Nature of Dividends* believes that there is a " horizon " beyond which investors refuse to look. Thus, the caution-factor would become zero beyond this point of time.

future, but also in relation to the proportion of the total available funds of the investor that are placed in any one field of investment. Accordingly, when these net revenue series have been estimated for each investment and suitable allowances made for risk, average rates of return may be calculated.

The second method of comparing eligible investments for relative lucrativeness is by discounting the net receipts expected to accrue in the future and comparing the present values calculated for the various investments considered. What rate of discount is most appropriate for such comparisons ? Since any investment to be profitable must yield a rate higher than that rate obtainable on riskless securities, it would seem that such a rate should be used for discounting.[1]

In calculating rates of return, risk was allowed for by applying, for each period, a caution-factor to the returns expected from the various investments. But when different opportunities for investment are compared by discounting the expected returns to obtain values in the present, it is possible to allow for risk by raising the rate of discount. The rate of discount will then be a composite rate including the riskless rate of interest plus the allowance for risk applicable to each investment. The caution-factor may thus be dispensed with, but, alternatively, if the investor finds it convenient, a caution-factor may still be applied to the periodical expected returns which will take account of the degree of uncertainty attached to each periodical figure and which will increase as the net revenues extend further into the future. But, in addition, a higher rate of discount may be used in deriving present values to take into account any special risk attaching to the particular investment as a whole. Furthermore, this higher rate of discount may *increase* as more funds are invested in any particular investment to deal with the additional and increasing risk incurred as the proportion of an individual's funds placed in any field of investment becomes greater.

Comparisons of investments by means of discounting by a composite rate of interest to obtain present values as above described is found convenient in practice. Professor

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[1] These riskless securities may be either long-term bonds, for example, consols, or short-term loans such as Treasury Bills. The investor may use different types of riskless securities and the rate chosen may be an average of the highest rates estimated to be obtainable over the life of the prospective investment. See M. Abramovitz op. cit., p. 89.

J. B. Williams writes: "The customary way to find the value of a risky security has always been to add a 'premium for risk' to the pure interest rate and then use the sum as the interest rate for discounting future receipts."[1]

The two methods of comparing investment opportunities for relative lucrativeness can be shown by two diagrams illustrating two investment opportunities. Each diagram will show both methods of comparison. In Figures 1 and 2 time is measured along OX and OX' and value along $O\Upsilon$ and $O\Upsilon'$.

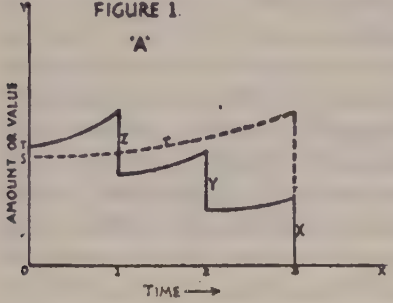

FIGURE 1.
'A'

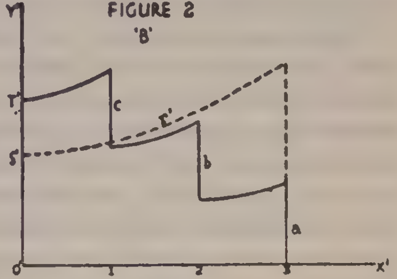

FIGURE 2
'B'

The estimated net revenues x, y and z in Figure 1 given by investment opportunity "A" and a, b, and c in Figure 2 given by investment opportunity "B" accruing at the end of periods 1, 2 and 3, are yielded by the *equal* and given amounts of initial investment OS and OS'. Now if the method of discounting is to be shown, we can make use of Professor Fisher's "discount" or "capital value" curves to reduce the value of the net revenues estimated to be secured at future dates to present values. Thus "x, y and z" in Figure 1, at the end of periods 1, 2 and 3, when discounted at the riskless rate of interest chosen, become $O\mathcal{T}$ in the present; and similarly "a, b and c" in Figure 2, when discounted at the same riskless rate of interest, become $O\mathcal{T}'$ in the present.[2] From these it may be seen that investment opportunity "B" with the present value $O\mathcal{T}'$ as shown in Figure 2, is superior to investment opportunity "A" in Figure 1 with a lower present value of $O\mathcal{T}$.

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[1] J. B. Williams, *The Theory of Investment Value*, p. 67.

[2] The method chosen to illustrate this discounting process is that the net revenues accruing at the end of period 3 ('x' and 'a') are discounted for one period to time '2'. Thereupon the sum to be discounted is increased by adding to this discounted figure $\left(\frac{x}{1+i};\ \frac{a}{1+i}\right)$ the net revenues estimated to be received at the end of period '2' $\left(\frac{x}{1+i}+y;\ \frac{a}{1+i}+b\right)$

Consider now the method of comparing these two investments by calculating for each the average rate of return over cost. In the same figures these average rates of returns are calculated and are shown to be "*r*" in Figure 1, and "*r′*" in Figure 2. That is to say, for an investment *OS* in investment opportunity "*A*", the average rate of return is calculated to be "*r*", whereas with the same investment *OS′* in "*B*", the average rate of return "*r′*" is obtained. Therefore as the "*r′*" curve is steeper, indicating a higher rate of return in Figure 2, investment opportunity "*B*" is again shown to be preferable to "*A*".

Such comparisons of investments as can be made by these two methods described above are useful to any investor who contemplates putting all his money into one investment—that investment yielding the highest average rate of return over cost or that investment which has the greatest present value. But to the investor who seeks the highest yield available—who wishes to maximize his average rate of return, or to maximize the present value of his investments —and who is willing[1] to divide his funds among different investments, *it is necessary to calculate differences at the margin.*[2] For this procedure, when the first method of comparison is used, *marginal* rates of return over cost must be calculated. This rate is that which will equate in the present, the future increase in the net returns expected from the investment of an additional unit of money. Thus in the equation given previously, "*k*" will become an additional unit of investment[3] and not the total amount of initial investment; $a_1, a_2, \ldots a_n$ will now be the increases in the annual net returns resulting from the additional

and this larger sum is discounted for one period bringing the calculation to time '1' $\left(\frac{x}{(1+i)^2} + \frac{y}{1+i};\ \frac{a}{(1+i)^2} + \frac{b}{1+i}\right)$. Again '*z*' and '*c*' are added to the discounted totals which have been calculated for investment opportunities 'A' and 'B' respectively, $\left(\frac{x}{(1+i)^2} + \frac{y}{1+i} + z;\ \frac{a}{(1+i)^2} + \frac{b}{1+i} + c\right)$ and these sums are then discounted for one period, $\left(\frac{x}{(1+i)^3} + \frac{y}{(1+i)^2} + \frac{z}{1+i};\ \frac{a}{(1+i)^3} + \frac{b}{(1+i)^2} + \frac{c}{1+i}\right)$ giving *OT* and *OT*¹ as the present values.

[1] As has been stated previously, such division of funds may increase the yield by spreading and diminishing the risk.

[2] I am indebted to Mr. E. Rothbart for help on this and other points in this note.

[3] The size of the increment of investment will depend upon the nature of the particular investment opportunity. A bond may require an investment of £100, a share may require £5, while an enterprise may require £50,000 initially and then less or more as the business develops or declines.

investment; "i" will then become the marginal rate of return over cost for this investment.[1]

As investment in any particular line of activity is increased beyond a certain stage, the marginal rate of return resulting from each added increment of investment will eventually begin to diminish. This may be due to various factors,[2] perhaps the most important of which are the rising costs of borrowing[3] and the effect of the previously mentioned rising caution-factor associated with the particular investment in question. An investor in allocating his funds wishes to secure on the amount invested the highest possible average rate of return. This is done by comparing the returns offered to *additional* units of investment by the opportunities for investment chosen as being eligible for consideration. He will discontinue investing in one investment when the marginal rate of return from an additional unit of investment in this investment opportunity is lower than the marginal rate of return offered by another opportunity for investment. Given his available funds as assumed, he will be in equilibrium when the marginal rates of return from all investments considered are equal.[4]

The marginal and average rates of return confronting an investor and the allocation of his funds under different assumptions as to the amounts he has available for investment, can be shown diagrammatically. Measure along OX the amount of investment, and along OY the rates of return. Let us simplify the field of choice open to the investor so that only three possibilities for investment are considered. Let "a" represent a riskless security. This may be a Government bond[5] or a Treasury Bill. The return yielded by this security, for a considerable amount of investment, will be independent of the sum invested and therefore average and marginal rates of return over cost will be equal up to the point "*k*" on the diagram. Let "*b*" represent the returns offered by a risky security—an ordinary share in some company. Again the curves indicating marginal and average rates of return will be identical up to a certain amount of investment and will then begin to fall. Decreasing returns for this security will be in evidence sooner than in the case of "*a*" because of the increasing risk associated with additional amounts of investment in "*b*". "*C*" will be the estimated net returns expected from an investment in a business enterprise. This business, requiring a relatively large amount of initial investment, will yield higher and increasing net returns up to a point. Beyond a certain amount of investment, additional units of funds will yield decreasing net returns which, in the case of this type of investment, may well decrease rapidly.

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[1] Let "k" be 100; let "a_1" be 105; let $a_2, a_3, \ldots$ be zero. The previous equation then takes the form: $k = \frac{a1}{1+i}$ and inserting the assumed values, $100 = \frac{105}{1+i}$; $i = .05$; the marginal rate of return is 5 per cent.

[2] Mr. Kalecki, op. cit., p. 97, discusses also "large-scale diseconomies and imperfect competition" as additional factors tending in some cases to lower the marginal rate of return.

[3] As borrowing possibilities have been excluded in this section, such costs will not influence the marginal rate of return here, but will enter the picture when this assumption has been removed.

[4] There may be discontinuities in the marginal rates of return of different investments preventing the attainment of such an equilibrium.

[5] This type of security will be free from the risk of loss of income, and as much as is possible, free from risk of loss of capital.

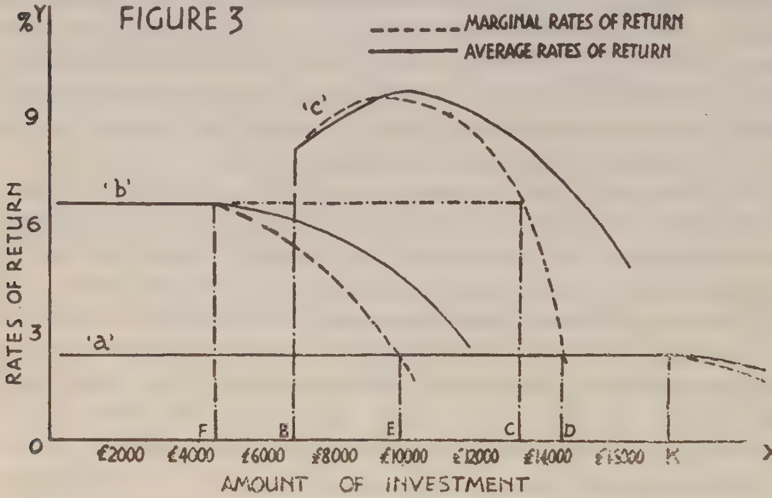
FIGURE 3

It can be seen from the diagram that an investor with a sum of money to invest up to but less than the amount *OB* would invest it all in investment "*b*" because the average rate of return for "*b*" is higher than that for "*a*". With any sum greater than *OB* but less than *OC*, he would prefer investment opportunity "*c*". From "*B*" to "*C*" average rates of return for "*c*" are higher than those for "*b*". After *OC* has been invested in "*c*", it will be profitable to consider investing marginal units of funds in "*b*". The marginal rate of return for "*b*" is higher than that for "*c*" and is so for additional units of investment up to the point "*F*".

At this stage, *OC* has been invested in "*c*" and *OF* in "*b*". Further units of funds will then be placed alternatively in "*b*" and "*c*" till *OD* has been invested in "*c*" and *OE* in "*b*". Thereupon, further amounts of funds would be invested in "*a*" up to the point "*K*" when diminishing returns in this investment opportunity make it necessary to reconsider returning again to "*b*" and "*c*".

The above conclusions can be stated in general terms. The investor will place his funds among the investments selected as suitable according to the psychological and other criteria described in Part I, so that the higher marginal rates of return are chosen, until in a position of equilibrium, these rates of return are equal. This equilibrium position is here limited by the amount of the investor's own funds because of the assumption that borrowing is impossible. If funds permit, the equilibrium position will be such that marginal rates of return are equal to a riskless rate of interest such as that given by a Government bond or a Treasury Bill.

Now it is necessary to show how this analysis may be made, and these conclusions reached, by the method of discounting and comparing present values. With borrowing possibilities excluded in this section, and considerations of time-preference to be dealt with later, comparisons are made between the future net returns resulting from an additional unit of investment by discounting future net returns by a riskless rate of interest. The investor will endeavour to maximize the present value of his investment. The discounted marginal revenue resulting from the marginal cost of investing an additional unit in each investment considered must be calculated. The investor will choose those investments offering the higher present values. Given his available funds, he will be in equilibrium when the discounted marginal revenues obtained by discounting the additional net returns received from additional units of investment in each opportunity for investment considered are equal. If funds permit he will continue investing to the point where present marginal cost will equal discounted marginal revenue. The return on the last increment of investment will then be equal to that offered by a riskless security.[1]

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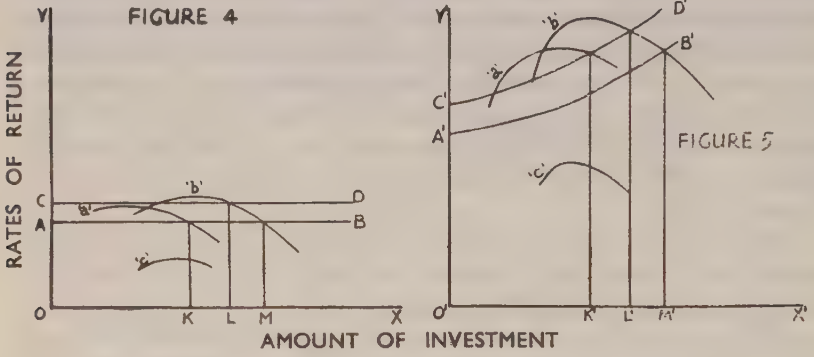
[1] Let present marginal cost be 100. Let future net returns from this investment be estimated to be 103. Then if the riskless rate of interest is 3 per cent., discounted marginal revenue will be $\left(\frac{103}{1.03} = 100\right)$ equal to present marginal cost and the return (3 per cent.) is equal to that given by the riskless security.

The allocation of funds under the assumption that the investor has sufficient money to push his investments to the point where the marginal rates of return are equal to a riskless yield can be illustrated by diagrams similar to those used by Mr. Kalecki.[1] By using two figures, it is also possible to show the two methods of allowing for risk, the first by the use of a periodical "caution-factor" and the second by a higher and increasing rate of discount. In Figure 4 there are drawn the marginal rates of return given by three investments, "*a*, *b* and *c*". Risk is accounted for by a periodical caution-factor.



In Figure 5 these same investments are shown, but as risk is allowed for in the rate of discount, the heights of the marginal rates of return will be higher and steeper. Those curves requiring more investment will be relatively higher. *AB*, *A′B′*, and *CD*, *C′D′* are two different rates of discount. *AB* and *CD* represent an estimate of two riskless rates likely to hold over the period of investment. These rates in Figure 5 are composite rates, including an allowance for risk, and for that reason the rates will be higher. That is to say, *A′O′* and *C′O′* are greater than *AO* and *CO*. The increasing risk resulting from the investment of a disproportionate amount of investment in any investment opportunity is reflected in Figure 5 in the upward slope of *A′B′* and *C′D′*. For purposes of convenient illustration it is assumed that this increasing risk is the same for each investment opportunity.[2] It is clear from the diagrams that when the rate of discount is *AB*, *A′B′*, then

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[1] Op. cit., p. 97.

[2] This would not be necessary in Figure 4 where the different rate at which the risk may increase in each investment may be taken account of in the "caution-factor".

OK will be invested in "*a*" and *OM* in "*b*". If the higher rate *CD*, *C′D′* is to be used, then investment opportunity "*b*" will be chosen and *OL* will be invested. In neither case will the inferior investment "*c*" be chosen.

Time-preference

Having discussed how certain investments, selected as being eligible for consideration, may be compared as to relative lucrativeness and degree of risk, and how the available funds of an investor may be divided most profitably among them, it is now necessary to turn to a consideration of time-preference. If the time distribution of net returns offered by the investment giving the highest rate of return (or greatest present value, if the method of discounting is used) is different from that preferred by the prospective investor, it is possible that he will choose, or value more highly, some other investment opportunity the income stream of which conforms more closely to his time-preference requirements.

The importance of time-preference will be greater for individuals than for firms. Consumption for an individual is an important factor and will influence his investment decisions, but the time distributions of the dividend payments of a firm has not the same meaning. For this reason alterations made in investment decisions due to the influence of this factor will be more likely in the case of individuals than for companies.

"Time-preference" as used in this note will refer to a rate of discount by which units of the net return expected to be received in the following or future periods, must be discounted to give a sum in the present period which represents an equivalent value to the investor. He will be indifferent as to whether he receives such an amount of net return in the present, or the estimated amounts to be received in the future. A marginal rate of time-preference could be drawn graphically for any individual which would vary over time according to his preferences for units of net return as between various periods of time. The marginal rate of time-preference cannot be lower than the highest marginal rate of return available. If the former were below the latter, it would be possible for the investor to continue investing so that the net returns expected to be received in the future will increase. As more funds are expected to be received in the future, the value to the investor of these future increases in returns will diminish, while at the same time the sacrifice of present funds by the additional investment will raise the rate of time-preference for units of net return in the present till it becomes equal to the marginal rate of return.[1]

Borrowing will have an effect on the marginal rate of time-preference. Borrowing in any period of time will reduce the rate of time-preference for net returns in this period and will raise the rate for units of net return in other periods. It is also possible by borrowing to alter the time-shape of any series of returns and apply the costs of borrowing to the proper periods to which these costs refer. But under the assumption used in this part that borrowing is not feasible, such changes in the marginal rate of return over cost, and the marginal rate of time-preference, cannot be made. Consequently when considering the eligible investments, it is possible that for certain investments, over certain periods of time, the marginal rate of time-preference will be higher than the marginal rate of return.[2] When this is so, the result will be, under the assumption that borrowing is impossible, to veto considerations of the periods of those investments where such is the case.

It was seen previously that comparisons of the relative profitability of various fields of investment and units of investment could be made, not only by means of rates of return, but by discounting at a riskless rate of interest[1] and comparing the present values so obtained. Discounting at a riskless rate is a useful method of comparing investments for relative profitability, but now the problem is not the selection of the most profitable unit for investment, but having determined this, the problem is whether or not the investment of this additional unit of funds is worth while to the investor, given his relative preferences for present and future income. The problem was solved in terms of rates by a comparison of the highest marginal rate of return with the investor's marginal rate of time-preference. The same answer would be obtained by discounting the expected increases in future receipts offered by the most profitable investment by the investor's marginal rate of time-preference. If the present value so obtained was greater than the cost of investment, it would obviously be in the investor's interest to make the investment. Since the marginal rate of time-preference cannot fall below the highest marginal rate of return, it can be used as a general guide to investment policy.[2] Dr. Abramovitz outlines this policy as: "It is always worthwhile to lend or invest so long as the expected increases in future income thus secured are equal to the amounts invested when the increases are discounted back to the time of investment by a rate equal to the investor's marginal rate of time-preference."[3] The general policy in terms of rates is that it will be always worth while to invest when the marginal rate of return is greater than the marginal rate of time-preference.[4]

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[1] This point is of interest with relation to the investment policies of individuals and partners contrasted with the policies of limited companies. An individual or the partners of a firm will continue investing marginal units of funds up to the point where the marginal rate of time-preference is equal to the highest marginal rate of return available. But what is to determine the investment policy of a joint-stock company? What considerations should guide the directors of a company in deciding what proportion of current earnings should be "ploughed back" into the firm and what proportion shall be distributed as dividends? It might be thought that the Company Law relating to Dividends would provide an answer to this question by specifying that joint-stock companies must "maintain their capital" in some definite manner. But because of difficulties as to the meaning of such a concept and further difficulties which would be caused in attempting to enforce a rigid rule due to the essential difficulties of valuation, accompanied by a wish not to interfere unduly with business practice, the Courts have allowed considerable freedom to directors with regard to dividend policy. As a consequence company directors may be influenced by other considerations than a theoretical postulate to the effect that funds should be invested up to the point where the marginal rate of return yielded by further reinvestment in the company will be no less than that offered by, shall we say, a riskless security?

[2] Considerations of time-preference must be worked into the allocation procedure. The individual's marginal rate of time-preference will change as funds are invested in different fields. He must try to arrange his investments so that the returns flow in when required by him, and yet choose those investments which yield highest rates of return. Thus investment "*b*" may not have a favourable time-distribution of returns but when considered in conjunction with the flow of returns from "*a*", the total result may be suitable. Adjustments must be made in this manner rather than considering each investment in the light of an absolute standard given by the investor's desired time-distribution of total returns. But when adjustments have been tried, it still may be possible that certain investments, or periods of investments, will prove to be unsuitable for reasons of time-preference requirements and thus be barred from being chosen for investment.

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[1] That is when the caution-factor is used to account for risk. A composite rate of interest may also be used which will include an allowance for risk as well as the riskless rate of interest.

[2] In the case of calculations made by an individual investor, his personal rate of time-preference will be used in place of the riskless rate of interest for purposes of investment analysis. Comparisons made by means of discounting at a riskless rate may still prove useful, but it is true, as Professor Williams says, that: "The only case in which the market rate of interest should be applied is when the *analyst* is speaking not for himself personally but for investors in general. Then he should use the pure interest rate as it is expected to be found in the open market in the years to come" (op. cit., p. 67). If risk is allowed for in the caution-factor the "pure interest rate" used will be the highest riskless rate expected over the period of investment.

Thus for an individual or for a firm, calculations may be made by comparing rates of return. If calculations are made by discounting, however, because time-preference is important for an individual, it would appear that the rate to be used for discounting is the investor's marginal rate of time-preference. But in the case of a corporation, because the relative profitability of different modes of investment is more important than considerations of time-preference, discounting will be done by a riskless rate of interest. (See footnote 1, page 193, for the rate used when borrowing is possible.)

[3] Op. cit., p. 85.

[4] For example, let the marginal rate of return be 5 per cent. Let the marginal rate of time-preference be 4 per cent. Therefore as the former is greater than the latter an additiona

III

THE COMPARISON OF INVESTMENTS AND THE ALLOCATION OF FUNDS AMONG THEM WHEN THE INDIVIDUAL HAS POSSIBILITIES OF BORROWING MONEY FOR PURPOSES OF INVESTMENT

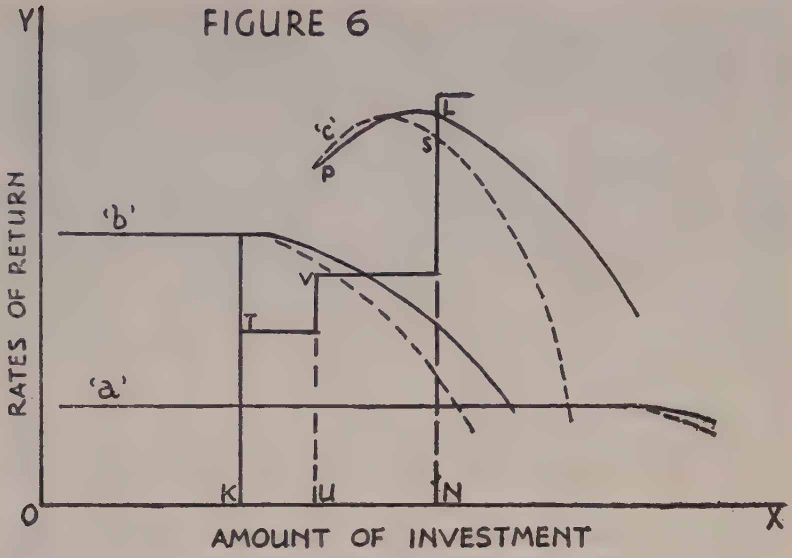
Opportunities of borrowing will affect the comparison of investments and the amount invested in each, in two ways. It will allow the investor to increase the amount of funds invested, and, secondly, borrowing will affect the investor's marginal rate of time-preference and may widen the range of investment possibilities.

Dealing first with the allocation of funds among investments, and leaving the effects of time-preference for examination later, the problem to be solved is the extent to which the investor will continue borrowing for purposes of investment. It will not pay the individual to invest additional funds in any investment opportunity when the marginal rate of return is less than or equal to the marginal borrowing rate. The investor will continue borrowing until the marginal rate of return is brought to equality with the borrowing rate on the marginal unit of investment. This position can be illustrated by a diagram somewhat similar to that used previously. Let us consider again "*a*, *b* and *c*," the three investments examined in Figure 3. The marginal and average rates of return for these are shown in Figure 6.

Let *OK* be the amount of his own funds that the investor has available. If it was impossible to borrow money, he would have invested this amount in investment "*b*". Let *TK* be the borrowing rate for marginal units which is constant for an amount of borrowing to the extent *KU* at which point it rises to *UV* and proceeds in this manner by rising in steps. These abrupt rises will be caused by the action of the creditor or by the necessity of seeking elsewhere for additional funds which can only be obtained at this higher rate. Now let us examine the figure in order to ascertain how the investor will place the available funds. It is clear that he will choose investment opportunity "*c*" and that he will continue investing till the sudden rise of

unit of investment would be made. Now by discounting: if the marginal cost is 100 and marginal receipts are 105 (at the end of period 1), then by discounting marginal receipts by the marginal rate of time-preference, we should get a result greater than marginal cost. This is seen to be so: $\frac{105}{1.04} > 100$. Therefore the investment will be made. The same result is reached by both methods of calculation.

FIGURE 6



the marginal borrowing rate cuts the marginal rate of return for "*c*" at *S*. That is to say, he will stop investing in "*c*" when the point *N* has been reached. The final result will be an investment of *ON* in "*c*" of which *OK* is his own money and *KN* represents borrowed money. He will have borrowed *KU* funds at the rate *KT* and *UN* at the rate *VU*.

But the procedure is not yet completed. The costs of borrowing must be applied to the investments requiring borrowed funds. This will have the effect here of reducing the height of the curves for investment "*c*". A new calculation must then be made to take account of these costs. This may result in a slightly different allocation of funds if the average rate of return for "*c*" between points *P* and *L* falls below the average rate of return for "*b*". It will necessitate different amounts of investment if the marginal rates of return fall below the borrowing rate at different points from those indicated in the diagram.

It is now necessary to examine the effects on the investor's marginal rate of time-preference[1] of the possibilities of borrowing that are now available. First of all, the opportunities of borrowing will widen the range of investment possibilities. Certain investments which could not be considered because of an unfavourable time distribution (where the marginal rate of return is below the investor's marginal rate of time-preference) may now, through the possibilities of borrowing, become eligible for consideration. Borrowing the funds that are necessary for consumption or investment in certain periods will reduce the rate of time-preference applying to these periods.[1] Borrowing in such periods—periods where the marginal rate of time-preference is higher than the marginal rate of return—will continue to the point where the marginal rate of time-preference is reduced to equality with the marginal rate of return. The additional costs of borrowing for alterations in the marginal rate of time-preference must then be applied to the intervals of time in which these costs were incurred. This will have the effect of reducing the marginal rate of return over cost of the investments where borrowing for this purpose was necessary.

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[1] It is to be noted again that these effects have greater importance for an individual than for a firm. See page 187.

The procedure by which a prospective investor may select investments and distribute his funds among them can now be summarized. Certain eligible fields of investment will first be selected according to the psychological and other criteria sketched in Part I. Thereupon the investor will calculate marginal rates of return for the different investments selected. In making these calculations[2] the advantages of lucrativity, time-distribution of returns and relative riskiness attaching to the estimated returns must be weighed. Any costs of borrowing entailed in altering investments with unfavourable time-distributions of returns will have an influence on the different rates of return and thus the particular investments selected. The calculations will result in such a distribution of funds that the marginal rates of return will be equalised at the margin of investment. The margin of investment will, if the investor's own funds permit, be at the point where the marginal rates of return for risky investments are equal to that marginal rate of return offered by a riskless security. But investment may perforce stop short of this point due to the higher cost of borrowing. In this case the margin of investment will be at that point where the highest marginal rates of return available are equal to the rate for borrowing the marginal increment of investment.

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[1] Borrowing will raise the marginal rate of time-preference in other periods of time where the amount of net receipts in these periods will be lower due to the necessity of repayment. The changes in the marginal rates of time-preference must be examined again in order to see that this rate will not have risen above the marginal rate of return.

[2] The amount and kind of financial information relating to investments and enterprises, especially that provided by Accountancy, is a matter of extreme importance to the investor, or potential investor. This is the data on which he must work in trying to compare his investments and allocate his funds among them in the most profitable manner. Any improvement in the kind and quantity of financial information will tend to secure better distribution of resources among investments.

The same conclusions may be reached if, instead of comparing the marginal rate of return with the borrowing rate, one uses Dr. Abramovitz' method and discounts the expected increases by the marginal rate of time-preference. Since the marginal rate of time-preference cannot exceed the borrowing rate, at the margin of investment the marginal rate of time-preference, the rate at which the last unit of investment may be borrowed, and the marginal rate of return will all be in equality. Consequently, discounting the increases in the receipts expected to be received by the investment of the additional unit of borrowed funds would yield a present value equal to the cost of the borrowed funds. This expresses the same situation as that given by the statement that the marginal rate of return equals the marginal borrowing rate.

A general statement of investment policy in terms of this method of analysis would be that: the investor will first select the eligible fields of investment according to his psychological preferences as outlined in Part I. Different possibilities of investment will be compared by discounting the expected returns by the marginal rate of time-preference.[1] Funds will then be distributed among these investments so that the highest present value of the discounted net receipts expected to result from the investment will be secured. This may entail borrowing or lending to alter the time-shape of profitable investments to that preferred by the investor. The costs or receipts of such borrowing or lending will be applied to reduce or increase the present value of the investment. The investor will continue investing additional units of funds so long as the present values obtained by discounting the expected net receipts at the marginal rate of time-preference are greater than or equal to the cost of investing these marginal units of funds.

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[1] In the case of joint-stock companies where time-preference considerations would seem to be less important than the relative profitability of different modes of investment, it might seem more realistic to say that the estimated net returns are to be discounted by the marginal borrowing rate. A firm will then continue investing additional units of funds so long as the present values obtained by discounting the expected net receipts at this rate are greater than or equal to the cost of investing these marginal units.

A Note on Monopoly

By P. T. Bauer

1. It is generally recognised that the development of the theory of imperfect competition is among the most important advances witnessed in economic theory during the last few years. Originally applied to the theory of value in the restricted sense of the term, it has been introduced into the theory of money (or output as a whole), into the theory of real and money wages, and it is being regarded as providing the clue to the secular stability of the distribution of the National Income.

The purpose of the following paragraphs is not to deny the importance of these developments, nor to cast doubt upon the legitimacy of the extension of the theory of imperfect competition to the theory of money and distribution. It is, however, suggested that the present line of approach is not satisfactory, and, in particular, that with the extension of imperfect competition to the wider fields of theoretical and applied economics, a burden is placed on the theory which in its present form it is unable to bear.

2. The leading exponents of the theory of imperfect competition have admitted the limitations of their analysis,[1] and it has been suggested[2] that in its simplest form (sloping demand curve, unique correlation between price and output, and disregard of reaction by other oligopolists) it is not to be found in real life. Nevertheless, the theory continues to be based very largely on the simple instance of sloping demand curve; more surprising, in its narrowest form it was adopted as the basis of the extension of the theory to wider fields.[3]

3. It is suggested that, apart from complications introduced by price discrimination, there can be distinguished

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[1] E.g. Mrs. Joan Robinson: *The Economics of Imperfect Competition*," *passim.*

[2] Kaldor: "Market Imperfection and Excess Capacity," Economica, February, 1935.

[3] E.g. Kalecki: *Essays in the Theory of Economic Fluctuations*, *passim*; especially "The Distribution of the National Income."

at least four different kinds of market imperfection each requiring different analytical treatment.

(*a*) To take the simplest case first, an important instance of the sloping demand curve without further complication is provided by the working of the Palm Oil Pool. For some time past suppliers of Eastern (i.e. Sumatran and Malayan) palm oil have been members of a tight cartel, which between 1934 and 1940 controlled about 98 per cent. of the total supplies of Eastern palm oil. In the world markets the cartel was faced with a number of substitutes, among which African palm oil, American tallow and lard, and Eastern coconut oil were the most important. The various oils and fats can be substituted for each other, but the elasticity of substitution is not infinite. The Pool was confronted by a sloping demand curve and found it necessary to reduce its price substantially when attempting to cut into the markets of its competitors. The suppliers of tallow, lard and coconut oil were not, however, organised and the supplies depended almost entirely upon climatic conditions. Consequently the Pool never considered the reaction of its competitors to its price policy. In short, we find here a " text book case " of some importance.[1]

(*b*) A different problem arises when the monopolist takes into account his competitors', as well as his customers', reaction. This problem has been discussed at length in recent years under the name of duopoly, or oligopoly, price leadership, and has received theoretical attention[2] as well as practical description.[3] The instances of the most important American trusts (Standard Oil, U.S. Steel), as well as the price policy of the leading motor manufacturers in America and Great Britain, are so widely known as to render bare mention sufficient.

(*c*) A third category is furnished by the well known cases in which (contrary to generally accepted analysis) everything varies except price. The rapidly increasing number of branded commodities, as well as a very wide section of retail distribution, belong to this category. Wide fluctuations in output, turnover, costs, profits, and even wages seem compatible with rigidly stable prices. The tendency in this direction is of course generally recognised, but it has gone to truly remarkable lengths. The price of the two essential raw materials going into a leading brand of toilet and shaving soap have varied in recent years as from 100 to 300 and back again to 80 without any reflection in the price of the finished commodity.

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[1] The value of the Pool's output averaged between £3 Mn. and £6 Mn. a year, varying with the world price of vegetable oils.

[2] Chamberlin: " The Theory of Monopolistic Competition "; Kahn: " The Problem of Duopoly " (*Economic Journal*, March, 1937); Hicks: " The Theory of Monopoly " (*Econometrica*, January, 1935); Kaldor: " Market Imperfection and Excess Capacity " (ECONOMICA, February, 1935), to mention only a few.

[3] A. R. Burns: *The Decline of Competition.*

(*d*) It is, however, the fourth category which differs most markedly from the "text book case" of imperfect competition, and it will be recognised to be of very great and of growing importance. The last few years have witnessed a remarkable growth of monopolistic organisation among primary producers. The great majority of these proceed along similar lines; the individual producers are restricted to a given percentage (quota) of their basic output and maintain their individual selling organisations, while the quota is determined centrally. As has been pointed out elsewhere[1], the resulting picture is that of perfect competition over which a perfect monopoly has been established. The individual demand curves are horizontal straight lines up to the exportable quota of the individual producer, at which point they fall vertically. Thus both the average and marginal revenue curves of the individual producers are shaped ‾‾‾‾|, while the body determining the quota will be faced by a sloping demand curve, of different elasticity from time to time. A variant of this case is represented by statutory schemes under which the central organisation accepts all supplies at a given price and resells them at discriminating prices, possibly destroying part of them. Thus for the individual producer the system is exactly the same as perfect competition, while the central organisation is in a position of a discriminating monopolist.[2]

There are very few primary products which have not been controlled along these lines in recent years. The International Rubber Regulation Committee, the International Tea Committee, the International Tin Committee, the Chadbourne Sugar Scheme, the English Potato Marketing Board, and the English Hops Marketing Board represent some instances, while the Federal Surplus Commodity

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[1] *Economic Journal*, June-September, 1940, p. 232.

[2] It is evident that with these individual demand curves it is not possible to envisage an average cost curve which would be tangential to the demand curve, the equilibrium usually visualised by the theory of imperfect competition.

Corporation, the French Office du Blé, the Brazilian Coffee Valorisation Scheme and the English Milk Marketing Board furnish important examples of the variant.[1, 2]

4. It is evident that the essentially dissimilar nature of the different kinds of market imperfections necessarily reflects on the general validity of the concept of the " degree of monopoly ". Indeed, the foregoing discussion and the paramount importance of our third and fourth categories,[3] i.e. of the instances, which cannot be expressed by means of a concept which assumes a sloping demand curve and a unique correlation between price, cost and output, should suffice to cast doubt on the significance of the concept.

In view of the exceptional importance attached to the concept by recent analysis and the heavy burden imposed upon it, it is proposed to give some further reasons for doubting its usefulness, or rather the meaningfulness of measuring it by the formula $\frac{p-c}{c}$.[4]

It must be noted that with $\frac{p-c}{c}$ measuring it, the " degree of monopoly " is almost certain to rise with every increase in the importance of capital, more particularly with the secular growth of capital per head, although the relative real remuneration of the hiring factor, or of a unit of capital, is likely to fall. Surely, in this case to represent the situation by an increase in the degree of monopoly is most misleading, as the meaning of the term clearly suggests

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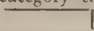
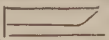
[1] It should be noted that in actual fact cases are frequently found exhibiting characteristics of two or more of our categories, e.g. cartels based on a quota system will be found among manufacturers of finished goods.

[2] Although no statistical data are available, it seems almost certain that our third and fourth categories cover a much wider field than the first and second. It is beyond doubt that the growing importance of semi-luxuries and of durable consumption goods associated with rising standards of living on the one hand, and with advertising technique on the other, will undoubtedly contribute to an increase in the number and importance of commodities belonging to our class three. So far as our fourth category is concerned, the striking reaction against the violent fluctuations in primary producers' incomes leaves no doubt that this class will grow, rather than decline in importance. In other words, the categories which are entirely omitted in the usual analysis are both more important, and likely to become much more important, than the cases covered by it.

[3] In the case of the fourth category the individual producers' average marginal revenue curves coincide and are shaped  while short period costs are likely to be horizontal straight lines rising more or less steeply after a given output has been exceeded. The individual supply and demand curves will thus form a kind of oblong  and the quota-fixing organisation will attempt to maximise the sum total of these areas, always considering of course possible competition by newcomers, by substitution and, especially in the case of statutory schemes, attempting to prevent a possible public outcry.

[4] A. P. Lerner: " The Concept of Monopoly and the Measurement of Monopoly Power," *Review of Economic Studies*, vol. 1, p. 169.

a rise in the reward of the residual factor. A somewhat similar instance is provided by the existence of certain short period overhead costs which must be covered for production to continue even in the short period, which do not however enter into marginal cost. Obvious instances are foremen's wages, assistants' salaries, costs of manuring and weeding in agriculture, and so forth. If these costs rise the equilibrium price of the commodity will go up, even if marginal costs are unaltered and quasi rents per unit of output no more than before. Here again an important example is furnished by our category four, where a rise in the producers' "quota" might nevertheless be accompanied by higher prices with marginal costs unchanged, if the other items of short period costs show a rise.

There remains a further point. The marginal cost in the $\frac{p-c}{c}$ formula has always been interpreted as marginal wage and raw material costs, to the exclusion of user cost. This exclusion is intelligible, since user cost cannot be measured in any simple way; nevertheless it is a serious omission, likely to become more important with the growth of capital per head. The rise in the price of raw materials and foodstuffs at the turning-point of the slump, when there is still plenty of unused capacity, can only be explained, (*a*) by increased willingness to hold stocks, (*b*) reluctance to use equipment except at a remuneration more in accordance with better prospects, i.e. higher user cost. The somewhat sharp rise frequently noticed must almost certainly be attributed to these causes. Here again the "degree of monopoly" fails us completely when trying to explain the observed phenomenon, particularly, as it invariably occurs in industries which either work under conditions of perfect competition, or fall under our fourth category, and in neither case has $\frac{p-c}{c}$ any relevance.

The very marked price fluctuations resulting from these two causes (willingness or reluctance to hold stocks and changes in user cost) should reveal the meaningless nature of $\frac{p-c}{c}$ as a "degree of monopoly"; when in September, 1939, the world price of the principal raw materials and foodstuffs rose by 20–50 per cent. almost overnight, this could not be explained by any monopolistic action on the part of the producers. If, on the other hand, it is claimed that the formula is not applicable to primary products, the theory based on it cannot serve to explain the distribution of income in those countries in which the production of these commodities is of any significance.

It is worth noting, furthermore, that our various categories of imperfect competition will react very differently to cyclical changes of price or output, and to changes in money wages. It might be permissible to assume a constant ratio of price to marginal cost in the case of our category one; but categories three and four are likely to behave in an exactly opposite manner during the trade cycle. The prices of the semi-monopolistic finished commodities are usually quite stable even if the prices of the ingredient raw materials fluctuate widely. Thus the "degree of monopoly" is likely to rise during the slump. In the case of the primary products controlled by means of quotas, the various committees have as yet been largely unsuccessful in preventing marked price falls during the slump, and although costs may vary cyclically "the degree of monopoly" is almost certain to fall during the slump. So far as changes in money wages are concerned, they are more likely to result in changes in the quota under our category four than in a variation of the prices of the semi-monopolistic commodities belonging to our class three.

5. It seems fairly clear that no useful purpose is served by merging such heterogeneous phenomena and covering them with the particularly meaningless formula $\frac{p-c}{c}$. In fact the "degree of monopoly," especially in its more recent application to the secular theory of distribution and to the theory of money, becomes a meaningless portmanteau very similar to the Velocity of Circulation. If an increase in the supply of money fails to result in a rise in prices, we are asked to observe a reduction in the Velocity of Circulation, whether the increased money represents increased incomes or not; similarly, whenever there is a change in marginal wage or raw material cost unaccompanied by a proportionate change in price, we are asked to observe a change in the degree of monopoly, although the most widely different reasons may have brought about the result.

It should be noted that the sloping demand curve and the degree of monopoly were originally intended for a very different purpose from, say, Mr. Kalecki's, and a much more limited one. It was to serve as one of the tools for the analysis of the theory of value which " . . . is merely a traditional misnomer for the analysis of the output of a single commodity . . ."[1]

There can be no doubt about the legitimacy of the use of the concept for this particular purpose, especially on the severe assumptions explicitly stated by Mrs. Robinson. It was of very great importance, practical as well as theoretical, in explaining how " competitive output " becomes a meaningless term in the case of the "octopus" industries and how normal profits are compatible with serious economic waste through underemployment of certain factors of production. Nor is the extension of this concept illegitimate to welfare economics as in Book 10 of *The Economics of Imperfect Competition*, or in Mr. Kahn's " Notes on Ideal Output " (*Economic Journal*, March, 1935), so long as careful account is taken of the underlying assumptions. The suggestion, e.g., of subsidies to industries in which the degree of monopoly is greater than the average degree in all industries is not less legitimate than the suggestion of subsidies to industries operating under conditions of increasing returns. These are however very different from the " practical " proposal in favour of strikes for higher money wages which, by reducing the degree of monopoly, would increase the share of manual labour in the National Dividend. It is unusual to find a proposal of similar importance based on such completely unreal assumptions. Readers of pp. 91–92 of Mr. Kalecki's book may well wonder whether or not " the theory of economics does not furnish a body of settled conclusions immediately applicable to policy[2] " ; it should be realised that as yet, at any rate, " the technique of the analysis of imperfect competition can only survive in an atmosphere rarefied by the adoption of very severe simplifying assumptions. The reader who is interested in results immediately applicable to the real world has every right to complain that these tools are of little use to him ".[3] The complaint against such proposals is different and not less well founded.

6. As is well known, the degree of monopoly has been

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[1] Mrs. Robinson, *op. cit.*, p. 16.

[2] J. M. Keynes, Introduction to the *Cambridge Economic Handbooks*.

[3] Mrs. Robinson, *op. cit.*, p. 327.

used recently to explain the remarkable stability of the distribution in National Incomes during the last half century or so.[1] The assumption that the degree of monopoly can provide a clue to the stable distribution of incomes represents a second attempt within a few years to furnish a neat theoretical solution of the problem; the first being, of course, the assumption of a unit elasticity of substitution between capital and labour.

It is difficult to accept this theory. The " statistical verification " simply consists of pointing to the constant share of labour in, say, the U.S. National Income and by pointing to the fall of raw material costs (relative to money wages), concluding that the degree of monopoly must in consequence have risen to explain labour's constant share in the rising income. Unless special care is exercised and very careful consideration given both to the underlying assumptions and to the complexity of the problem, this reasoning will resemble in a most striking fashion the Quantity Theory of Money to which we referred earlier. No attempt is made to show either that the supply functions of all, or nearly all, industries could in fact be represented by a horizontal straight line, or that the ratio of prices to marginal costs remained constant, although it is obvious that without evidence on one or other of these points the verification simply consists of assuming what is required to be proved.[2] But even if the evidence were in fact forthcoming, another fundamental weakness, which should be self-evident, still remains. During the period 1880–1930 easily the most important American industry was, of course, agriculture, and in this there was no case of sloping demand curve, and consequently there can be no question of the degree of monopoly.[3]

7. It has been justly claimed on behalf of the recent theoretical advances that they, for the first time, attempted to distinguish clearly between the various " units ", i.e. the individual firm, a single industry and society as a whole. The failure to make this distinction was undoubtedly the main source of confusion in earlier works of economic theory, and the drawing of distinction must be regarded as chiefly

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[1] Kalecki: " The Distribution of the National Income," in *Essays in the Theory of Economic Fluctuations*.

[2] I am indebted to Mrs. Robinson for this point.

[3] It may be added that the absence of any figures to show the proportion which the number of manual workers bears to the total employed population reduces even further the interest which may attach to this theory.

responsible for the recent progress. It would be regrettable indeed if further development as well as any practicable application of the theory of imperfect competition were blocked by an injudicious merging together of essentially different concepts,[1] a mistake the rectification of which might be very long and painful, as can be seen in the field of both pure and monetary theory.

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[1] To take just one example, the implication of the theory of imperfect competition in connection with welfare economics and ideal output will be very different, if our different cases are considered, from what they are if confined simply to the degree of monopoly. The "wastes of imperfect competition" differ significantly in respect of, say, categories three and four. Some of the most expensive forms of advertisement largely represent instances of one monopolist mulcting another, when for instance a newspaper charges £1,000 for a front page advertisement. Others represent the employment of "real resources" more nearly, say, when a number of sandwichmen are sent round the streets. Both instances differ from the wastes of the quota system, which consist essentially in the maintenance of high cost producers, by stablilising a *status quo.*

A Forerunner of Marxism: François-Jean de Chastellux

By W. Stark

Of the great social philosophers who distinguished the age of Louis XV, no one rose more quickly to fame during his lifetime, and no one fell more quickly into oblivion after his death, than François-Jean, Chevalier (later Marquis) de Chastellux (1734–1788). His treatise, " De la Félicité publique, ou Considérations sur le sort des hommes dans les différentes époques de l'histoire " (Amsterdam, 1772) had immediate success. Voltaire did not hesitate to place it above Montesquieu's " Esprit des Lois ", and that this judgment was widely shared is proved by the fact that Chastellux was soon (in 1775) made a member of the Académie Française, the Society of the Immortals.

The Essay on Public Happiness is the result of discussions which Chastellux had with the Abbé Mably, and must be regarded as the counterpart of the latter's " Entretiens de Phocion ". While Mably was convinced that mankind was happier in Antiquity than in Modern Times, Chastellux held that there is a steady process of improvement throughout history; while Mably thought that society should be reconstructed along entirely different lines, Chastellux had no faith in any preconceived plan of social reform and preached the doctrine of Laissez-faire. The main difference between the two lies however in the field of science proper: Mably embodied all the leading tendencies of the rationalistic age, while Chastellux was a forerunner of the nineteenth century.

The present note does not intend to give an exhaustive appreciation of Chastellux's achievement[1]: his formulation of the concept of evolution (*cf.* his discussion of Macchiavelli's view, *op. cit*, ed. of 1776, reprint of 1822, I, 164) and his attempts at a stricter criticism of historical sources (*cf.* his discussion of Titus Livius, l.c. I, 136 *sq.*), are more interesting to the historian of historiography than to the historian of the social sciences. Here only one aspect of Chastellux's work will be described: the striking similarity of some of his teachings with those later propounded by Karl Marx.

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[1] This paper is a by-product of a study on " The United States of 1776 in Contemporary European Sociology ". It is only meant to show that Chastellux, to whom my attention was drawn by Professor Laski, is an interesting thinker, who has not been given the place in the history of social and economic thought which he deserves.

This similarity is already obvious in the general concept of historical development which Chastellux entertained. He thought that the dawn of history found mankind in a state of equality; that the unfolding of man's intellectual faculties involved the evolution of social inequalities; and that in the end when man has achieved perfection, there will again be a reign of equality. "To the advantages which all beings enjoy under the hand of nature, we must reckon the uniformity of situation between the individuals of the same species . . . Into whatever detail we enter we shall always find that the happiness of all creatures consists in exactly fulfilling the wish of nature, and that regarded from this point of view the felicity of the individual cannot be different from that of the species." But a "consequence of the gradual perfection of the human race has been the inequality of progress, which has established a great difference between man and man, people and people, and which has given birth to war and oppression". But no artificial scheme can help, for "the remedy of this inconvenience is not to lead man back into a state of ignorance and simplicity from which he will never emerge, but to quicken his progress as much as possible: because it is only at the end of the way that equality can be found" (*l.c.* II, 238 *sq.*, 284 *sq.*). Replace the word equality by the word communism and translate the whole into Hegel's language, and you will get the Marxian scheme: primeval communism was the thesis; class society, the historical mission of which is to develop the productive forces, is the antithesis; and the communism of the future will be the synthesis, i.e., a state where perfect equality will be restored but the efficiency of capitalism preserved.

But even the "materialistic conception of history" is foreshadowed in Chastellux. He interprets the warlike character of the Romans and their religious system entirely as the results of their class contrasts and class struggles. He rejected the idea that the spirit of conquest was innate and natural to this people. "The spirit of conquest in a people that needed three hundred and sixty years before they could bethink themselves to make a siege! In a people who undertook only wars of reprisals or robbery; in a people who had never found out that to subjugate one's enemies it is necessary to seize their fortresses! Let us not leave the public squares of Rome to discover the spirit of their government, and let us seek the source of all the events that cause our amazement only in the dissensions between the people and the great. At first, the great, fearing the people who were excited by the tribunes, conceived the expedient of sending them to war: but as the soldiers had to provide themselves with victuals at their own expense, the campaigns could not be long. The diversions which the wars made in the public affairs were only temporary, and the people came back from these battles more defiant, more unmanageable than ever. It was then that it was resolved to prolong the wars, and to undertake sieges" (I, 131 *sq.*).

In another place, Chastellux puts his point with still greater clarity and emphasis: "Let us transport ourselves in thought into the centre of that city, and let us see a depressed and miserable mob crowded around the Senate. Let us hear them demanding—now in a complaining, now in a threatening tone—that the Senate should condescend to grant them some *arpents* of land for their subsistence. Let us hear the cries of those brave soldiers who show, between their noble scars, the shameful traces of whip-cord and chains. . . . The doors open, the senators appear, their wild looks announce their projects, a cruel joy is to be seen in their faces: what will they tell the people? The relief of their sufferings? Tranquillity? Abundance? . . . No, but that the enemy, attracted either by their secret intrigues, or by the courage that the long dissensions could not have failed to kindle in them, are advancing with great steps, and will soon be seen at the gates of the town. Already the Consuls, seated on their Curulian chairs, call the young people to their tribunal; to-morrow the enemy will be beaten. Perhaps the honour of beating him back will be bought by the blood of three thousand citizens; perhaps even fire and sword will be borne into the very Capitol. It does not matter: this time the Agrarian Law will not be published. It is thus that wars are started; it is thus that the love of glory makes the Romans drunk, and thus that they march to the conquest of the world" (I, 173 *sq.*).

But not only the leading fact of the political life, even the leading institution of the spiritual life of Rome must be understood in the light of its class struggles: "At Rome, religion . . . remained always in the hands of the great, and served them as a protection against the tumultuous enterprises of the people whom they oppressed. . . . In the first century of the Republic, the right of taking the *auspices* marked the essential difference that existed between the nobles and the people, and all Roman history testifies that these (solemn sacrifices) were necessary . . . to all those who were destined to occupy the first public offices; I could quote several examples of consuls who abandoned their armies because some formality had been lacking at their inauguration. . . . What! said Appius and his followers, shall we see at the head of our armies, consuls who have not taken the *auspices*, *inauspicati consules!* In short, nothing is better proved than the intimate union that existed with the Romans between government and religion, and above all between religion and aristocracy. . . . When the people had begun to shake off the chains which the patricians had imposed on them they used religion with advantage for the preservation of their position" (I, 242 *sq.*).

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More striking still than the parallel between Chastellux and Marx in the main concept in their philosophy of history is their agreement in the main tenet of economic doctrine. Chastellux in fact anticipated Marx's whole theory of surplus value.

Seeking a reliable method of effecting an exact comparison through time of the weight of the impositions laid upon the peoples throughout history by their superiors, Chastellux conceived the idea that a reduction of these burdens to terms of labour would answer the purpose: "The simplest manner of making this appreciation is to value all taxes in labour and to regard all contributions as work which the subject is obliged to do for the sovereign. If a workman who earns twenty *sous* a day is taxed ten *livres*, is it not the same thing as demanding of him ten days' work for nothing? If a labourer cultivates five *arpents* of land, and if one demands of him the produce of one *arpent*, is it not as if one ordered him to till, to sow, and harvest that *arpent* of land at his own expense?" (I, 59).

Now, this valuation of the people's tributes to their rulers permits the determination of the degree of their exploitation: "Indeed even a calculation of it could be made: it is a problem which is solved by algebraic computations, and which can easily be translated into numerical terms" (63).

What is true of the taxes taken from the working classes for the state holds good also of the profits, exacted from them by their masters. Chastellux developed the theory of surplus value with reference to an example which covers both cases: the old Egyptian monarchy, in which state and employer, subject and labourer, tax and profit were the same. "Such was the case of the Egyptians: all the net revenue belonged to the king, to the priests, and to the soldiers; for . . . amongst this people there were, strictly speaking, no landowners. The labourers, like the artisans, formed a class of mercenaries: or, rather, the first were all reduced to the rank of farmers as they were only the mere cultivators of the lands which belonged to the three great proprietors of the state, that is to say to the crown, the militia, and the priesthood" (69).

In order to find the degree of exploitation of the Egyptian (or any other) people, i.e., in order to ascertain their degree of happiness or rather unhappiness, it is sufficient to determine the following magnitudes: "First question: how many days in the year, or hours in the day, can a man work without either incommoding himself or becoming unhappy? (One may perceive at first glance that this question refers to the character of the climate, to the constitution and the strength of men, to their education, their nourishment, and the like; all things which can be easily ascertained.)

"Second question: How many days must a man work in the year, or, how many hours (must he work) in the day, to provide for himself what is necessary for the preservation of his life and his ease?

"If these two questions are solved, it will be easy to find how many days in the year or hours in the day remain available to any man, that is to say, can be demanded of him without encroaching upon his subsistence and his well-being" (60).

Is this not exactly the Marxian scheme? "The labourer, during one portion of the labour process, produces only the value of his labour power, that is, the value of his means of subsistence. . . . The surplus-value is determined by the surplus portion of the working day. . . . The rate of surplus-value

$s : v$ surplus labour : necessary labour

is therefore an exact expression for the degree of exploitation of labour-power by capital, or of the labourer by the capitalist" (*Capital*, ed. Dona Torr, 1938, 198 *sq.*).

But even here the parallel between Marx and Chastellux does not end : Chastellux indeed drew two conclusions from his theory which lie perfectly in the line of Marx's thought. The one is that the working classes will produce surplus-value only if they are forced to do so by the circumstances ; the other, that perfect happiness can exist only where exploitation is not known :

" Another truth following from our principles is that there is no net revenue but when there is some reason which obliges men to work beyond the time which they have destined for their own use.

" It follows also from what we have advanced that if a nation existed, which, without being poor, produced no net revenue, this nation would be the happiest in the world ; for here men could employ all the available time they have in continually increasing their felicity" (67 *sq.*, 71).

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The question naturally arises : did Marx know Chastellux ? No definite answer is possible. It is, however, not at all likely that he did. " La Félicité " indeed appears in one of Marx's early writings (*Die Deutsche Ideologie*, 1845–46, *cf.* Engl. ed. by Pascal, 1940, 86), but only in a quotation from Semmig's " Communismus, Socialismus und Humanismus " (*Rheinische Jahrbuecher* I, 1845), and it is clear that even Semmig himself cannot have known Chastellux since he does not mention his name and describes his work quite erroneously as drawing up a " dogmatic and dictatorial ready-made social order " in the vein of Weitling and Cabet. Marx's reading and learning were certainly vast, but first they concerned mainly revolutionary literature both liberal and socialist, and later economic literature in the narrower sense of the word. Chastellux's book belonged to neither of these categories. It is partly philosophical, partly economic, partly historical, in a word : an Essay on Public Happiness. Moreover, Chastellux was neither a liberal, nor a socialist. He was an aristocrat, and, in spite of his genuine desire to promote the well-being of his fellow-men, a thorough conservative. Such men lay beyond Marx's sphere of interest.

Book Reviews

Social Aspects of Crime in England Between the Wars. By **Hermann Mannheim.** George Allen & Unwin. 1940. 382 pp. 18s. net.

Readers acquainted with Dr. Mannheim's earlier work in the same field, *The Dilemma of Penal Reform*, will approach this new study with great expectations and they will not be disappointed. Material for it was gathered and prepared when the author held the Leon Fellowship of the University of London. As a Lecturer in Crimimology too, at the London School of Economics, it has been his business no doubt to discuss with his students the theory of crime in all its bearings. In addition, some years of practical experience as an administrator of justice in Germany, and personal contact with others similarly engaged in this country, have given Dr. Mannheim a sense of reality and a sureness of touch which would be lacking in one whose interest in the subject was purely academic.

Struck by the fact that, since Goring's scientific study of *The English Convict* was published before the Great War, no research of comparable importance—apart from Cyril Burt's *The Young Delinquent*—has been attempted into the causal factors of crime, and in particular its social aspects, he set himself to repair the omission. He approaches his task by a critical examination of the content and interpretation of the Criminal Statistics of England and Wales. This forms Part I of the book, and it will repay careful study by anyone who proposes to make use of the official statistics of crime ; the dangers of a too facile interpretation of the figures are clearly indicated. After this beginning it is not surprising to find that the author himself is extremely guarded throughout the book in the conclusions he draws, as befits one who has the imagination to see the many influences at work upon each individual criminal.

Successive sections in Part II are devoted to the influence of various social factors on crime—lack of work, drink, gambling, new methods of conducting business, to delinquency among juveniles and females, and to recidivism. In an introductory chapter the general tendencies to crime to which the last war gave rise are sketched. One significant example, " the far-reaching importance of which," as the author remarks, " nobody familiar with the atmosphere of military service in any country can deny " is the " gradual diminution of the individual's respect for property of the State." The persistence of this outlook is stressed in a recent report of the Education Officer of the London County Council: " it became a widespread habit to 'acquire' by the simple process of 'winning' . . . a new term and a new morality commenced . . . Parents to whom 'stealing' would be a more serious matter dismiss the delinquent acts of their children on the grounds that it was 'only scrounging' ".

The reader is reminded that all whose business it is to study closely and systematically the prison population agree in regarding the condition of unemployment as a vital factor in the production of crime. Where the rates of both unemployment and crime are high, the former, it is alleged, can safely be assumed to be the cause of the latter. Especially close is the connection between juvenile delinquency and unemployment in the home: clear evidence of this comes from a comparison of the figures in prosperous and depressed areas at different dates. But idleness is not the only character-destroying agency. Many credible authorities bear witness to the insidious influence of gambling in causing a gradual deterioration of the whole personality and so leading to crime. The rapid growth of this habit is one of its most serious features: expenditure on football pools was estimated two years ago at forty to fifty million pounds a year, yielding a profit of two millions to the promoters after deducting seven for expenses. The author is surely right in holding that the only radical way of attacking this pernicious vice—which owes its attraction to the element of pleasurable excitement it brings to people who are starved of the better things of life—is by a change in the whole social fabric.

Another remedy to which many resort when life seems cheerless is drink. Comparison of the figures of convictions for drunkenness in different areas can be most misleading, because the police often hesitate to press a charge owing to difficulties of procedure. Even when a conviction is secured, the treatment meted out is largely a matter of the magistrate's whim; the offender may be fined, imprisoned, put on probation, or—frequently in recent years—simply dismissed. None of these methods is really suitable for the habitual drunkard. In the author's view special institutions may be needed for such cases, but he does not make clear in what respect they should differ from inebriates' reformatories, which have not been a great success. Public drinking among women is said to have increased, but convictions are fewer because intoxicants are milder in quality.

The section on the relation of modern business methods to crime is of special interest. It touches on various branches of insurance, the growth of hire purchase, open store trading, the automatic machine, railway frauds, defalcations by solicitors. It may shock the innocent to learn that the protection of the law is needed for the children and grandparents of persons who take out insurance policies on their lives; anticipation of gain may lead to their neglect or even their murder.

Among the most valuable data assembled by the author are those on juvenile delinquency and recidivism in the later chapters of the book. The former are the result of an analysis of some thousand records of young men and women of 16 to 21 or 23 years of age who have been under the care of the Borstal and Aylesbury Associations. The latter come from the After-Trial Calendars of the London Criminal Court and Quarter Sessions. It is tempting to quote from the individual histories effectively summarised by the author, but space will not permit this. We are forced, as we read, to the sad conclusion that we are still far from discovering how to prevent crime. Not infrequently we run across such statements as " Borstal records excellent, but after-history unsatisfactory " ; and when we come to the recidivist the author confesses that " the rapidity with which one conviction follows another cannot fail to make a deep impression upon examining these records ". It is more evident than ever that crime is in the nature of a disease and its roots may be centred as much in the structure of society as in the criminal himself.

D. CARADOG JONES.

An Enquiry into the Nature and Effects of the Paper Credit of Great Britain (1802). By HENRY THORNTON. Edited in the Library of Economics, No. 2, by F. A. von Hayek. George Allen & Unwin. 1939. 368 pp. 12s. 6d.

A belated notice this of what is much more than a reprint of the neglected classic of which John Mill wrote in 1848 that it was " even then the clearest exposition that he was acquainted with . . . of the modes in which credit is given and taken in a mercantile community ". (It was really far more than that.) And so Mill extracted two pages of Thornton which are, I fancy, all that four English economists out of five have read of him since. Until recently this reviewer was with the majority. He is not the man to estimate with full knowledge Thornton's place in the history of economic thought. Thornton and Ricardo, Thornton and Wicksell, Thornton and Irving Fisher, Thornton and purchasing power parity, are discussed by the editor in his admirable introduction. The reviewer, who came fresh to Thornton's book some little time ago, on the look-out for more notions of a contemporary expert on the banking history of, say, 1780—1810, was delighted with the store of precise fact, the plain but lucid style—so unlike Ricardo's—and the penetrating thought of this banker-economist from the heart of the " Clapham sect ".

The reviewer, before he turned to the *Enquiry*, had read and respected Thornton's evidence given before the 1797 *Committee on the Bank of England*. This, with the full text of *Two Speeches on the Bullion Committee* of 1811, are printed by Professor von Hayek, with some other matter, in appendices—most appropriately ; for we thus get the evolution of the thought of an eminently well-balanced, well-informed, acute and fair-minded man on the whole course of banking and currency history from the crisis of '93 to the Bullion debates. At first a temperate defender of Bank of England policy—for which he has been called its apologist, and labelled, quite incorrectly, by the *D.N.B.*, a Director and a Governor—he became, through experience of the evolution of that policy after 1807–8 and service on the Bullion Committee, its equally temperate critic. He was too good a banker and economist ever to assign to bank-notes and their mere numbers the superstitious importance given to them, then and later, by half-informed publicists and politicians. It was not enough for the Bank to say, in 1810, that its increase of issue had been numerically reasonable, as it had in fact, if Thornton could show in 1811, as he could, that recent developments in economising the use of "money" allowed a higher price-level to be based on a given quantity of it.

One of the most attractive features of this edition is Professor von Hayek's biographical introduction. Descendants of Thornton, who include Mr. E. M. Forster, gave him access to MS. material of which the best use has been made. Henry's diary is as significant for the economist as for the historian of religion in England; and the editor does not neglect either aspect. Wilberforce and Stephen, Zachary Macaulay and Grant and Venn and Hannah More, with Granville Sharp and Bowdler are all there; and also what Thornton's firm owed "to the circumstance of many country banks rising up at the time, with which we were wise enough to become connected". These banks ranged from Edinburgh to Tiverton; and in '97 Thornton based an admirably scientific estimate of country note circulation on a judicious sampling of that scattered clientèle.

Thornton died, a young man by our standards, in 1815. It is sad to recall that his bank—then Sir Peter Pole, Bart., Thornton, Free, Down and Scott—suspended payment in 1825. However, it paid 20s. in the £, which was all that really Christian banker would have cared about.

J. H. Clapham.

The Contempt of Freedom: The Russian Experiment and After. By M. Polanyi. Watts & Co. 1940. x + 116 pp. 5s. 0d.

A Critique of Russian Statistics. By Colin Clark. Macmillan & Co., Limited. 1939. vi + 76 pp. 6s. net.

The four essays which Professor Polanyi has collected in the first of these volumes were, as the preface explains, written during the five years between 1935 and 1940 when the ideas of liberty "were left almost uncultivated" and "the progressive minds were so fascinated by the prospects of the revolution in Russia that they had little interest left for the fate of the traditional liberties." In the first and the last of these essays the author deals, *suaviter in modo, fortiter in re*, with two instances of (although he is too polite to describe them so) that *trahison de clercs* which threatens liberty in this country:

Professor J. D. Bernal's book on *The Social Function of Science* and Mr. and Mrs. Sidney Webb's *Soviet Communism.* The third essay, on " Soviet Economics—Fact and Theory," already deservedly well-known, gives a most careful and, at the time of its first publication (1935), unrivalled statistical analysis of economic development in Soviet Russia. The second essay in the book, finally, on " Collectivist Planning ", deals with some of the more general problems raised in particular contexts by the others. It has not been previously published.

The analysis of Professor Bernal's book in the essay on the " Rights and Duties of Science " is perhaps the most illuminating discussion yet attempted of the psychological propensities which so frequently turn the man of science into an ardent advocate of central planning, and of the inconsistencies which this attitude involves. While Professor Polanyi has no doubt that " the major force behind this attitude is the passionate desire to put science into the consciously organised service of human welfare ", he is convinced that a consistent policy of " organising " all scientific research on the lines advocated by Professor Bernal " would actually stop the development of science altogether ". And he points out that, characteristically, " all the brilliant and instructive pages of the book have no answer to the question : how should the progress of science be directed in order that it may benefit human welfare ? " The picture of the reality of controlled science in Russia, for which, apart from his own direct experience, Professor Polanyi can draw extensively on the Webbs, tends to confirm his worst apprehensions.

The new essay on " Collectivist Planning " is in many ways a further development on the same theme. As a contribution by an eminent scientist to the much discussed question, it deserves full attention, and there is much in it from which the economist can profit. Particularly interesting is the emphasis that " the term ' decentralised planning ' is . . . contradictory. The essence of planning is unity achieved by control from a centre." But : " as in the case of science, the comprehensive view is not an essential view but a superficial view and an ignorant view. From it not a single business proposition could be made which would not be rejected out of hand by any business man of special experience as grossly unprofitable, and which hence—in nine cases out of ten—would not also be grossly wasteful from the point of view of society as a whole." And Professor Polanyi's conclusion is that " general planning is wholesale destruction of freedom ; cultural planning would be the end of all inspired inquiry, of every creative effort, and planned economy would make life into something between a universal monastery and a forced labour camp."

Although the essay on " Soviet Economics " is now largely superseded by the second book to be reviewed here, it is remarkable how well its main conclusions have been confirmed by the more detailed and extensive investigations of Mr. Colin Clark, for which Professor Polanyi's study seems indeed to have served as a starting point. Although Mr. Colin Clark is able to point out several errors of detail and has of course been able to draw, not only on more comprehensive material, but also on much later information, the picture which emerges for the period up to 1934 is essentially unchanged—although Mr. Clark is able to report some substantial improvement since. But such conclusions as that food consumption per head in Russia in 1934 was much reduced as compared with 1913 and was 30 per cent. below that found by Sir John Orr for the worst fed 10 per cent. of the British population (and according to Mr. Clark this has only slightly improved up to 1937, which is the last year on record), and that " the housing of the workers, which, according to a Soviet writer, was in 1928 ' more terrible than those described by Engels during the Industrial Revolution in England ', suffered a drastic deterioration during the following four years ", still stand.

Mr. Clark's *Critique of Russian Statistics* is not so much a direct critique of official Russian figures as an attempt to arrive, from whatever figures are available, at reliable information about the development of the national income of Russia and its distribution. If the closely packed 69 pages of the text are not precisely easy reading, they ought nevertheless to be carefully studied by anybody seriously interested in Russia. Quite apart from the general problem of the success of the socialist experiment, the analysis of the available figures throws extremely interesting sidelights on a number of important and even highly topical questions. That Russia's main problem is still the Malthusian Devil, which Mr. Clark thinks she is only just beginning to corner by absorbing the whole of her population increase in industry, is distinctly interesting ; and those who hope for some sort of international socialist régime might well ponder over Mr. Clark's comment on what he calls " the irony of almost cosmic grandeur . . . Soviet Russia struggling with huge and uncontrollable increases of population at a time when the economic and political structure of the West is beginning to tremble before the approaching blast of depopulation " : indeed, " American and British statesmen who celebrated their victory in the war by complacently blocking up these channels of migration, little knew what their countries would later have to answer for." Of the points of information of special immediate interest one may be mentioned here : the density and congestion of traffic on the Russian Railways, which (measured in million ton kms. per km. per annum) even in 1913 with 1.13 was higher than in any other country, had by 1936 risen to 3.80, or 3½ times the former figure !

That Mr. Clark handles all the difficult problems which any utilisation of Russian statistics raises with the virtuosity we have learnt to expect from him, the readers of this journal will hardly need to be told. As a specimen of his main results, the following figures, combined from two of his tables (pp. 49 and 68), may be of general interest:

	Sterling value of output per head			
	1913	1928	1934	1937
Agriculture	51·5	45·3	37·5	42·5
Non-Agriculture ..	76·1	84·8	85·5	122·2
Total	58·5	55·5	51·0	72·3

The significance of these figures must be judged with reference to the following numbers of persons occupied in Agricultural and Non-Agricultural production respectively:

	Numbers engaged (millions)			
	1913	1928	1934	1937
Agriculture	34·1	38·2	39·8	40·1
Non-Agriculture ..	13·85	13·1	21·1	24·0
Total	47·95	51·3	60·9	64·1

F. A. v. HAYEK.

Britain's Food Supplies in Peace and War. By CHARLES SMITH. London: George Routledge & Sons, Ltd. 1940. x + 290 pp. 10s. 6d.

What should be the agricultural policy of an industrial country? When Britain set out, a hundred years ago, to exploit the food and raw materials of all the world, she was committing herself, consciously or not, to a peace policy. In the hungry forties the limit to the provision of further wages and profits for manufacture was the absorptive capacity of the overseas market, and this could be very greatly increased if the protection which home food production had enjoyed for so long were withdrawn. The possibility of war and the need for any high degree of self-sufficiency such as the previous generation had known seemed remote, and only the privileges of the landed interest stood in the way. There seemed no case for their retention and their abolition introduced, in due course, a process of economic selection into the home agricultural industry, dictated by the costs of production and transport of food in those countries with which the manufacturing industries began more and more to trade. Grain was the first competition which the home farmer had to meet, wheat, particularly, which was as good as or even better than his own. Then came, in turn, frozen meat, to compete with the lower grades of home-killed meat; chilled meat, which puts up a strong attack on the position of our higher grades; and finally the manufactured dairy products, cheese, butter, condensed and dried milk. Only the new milk market was left to the home farmer unassailed, and even this crumbled whenever production exceeded demand and there was a surplus which had to be sold at low prices for manufacture.

As a consequence of these developments in uncontrolled world trade, the dependence of Britain upon home produced food supplies fell from almost 100 per cent. a hundred years ago to about 40 per cent. when the present war broke out. Mr. Smith's book, which was written for the most part apparently before that event, deals in turn with all the major commodities, bread, milk and its products, eggs, meat, bacon, fish, fruit and vegetables, tea and sugar. He gives details of the consumption of each, the sources of supply, the methods of distribution, and he concludes each section with suggestions for the improvement of supplies, of the channels of distribution, or for the reduction of cost to the consumer. Remarkable differences occur in the importance of these various commodities in home agriculture. Thus, while some nine out of ten of the consumers' breakfast rashers were imported, the proportion was exactly reversed of the eggs which accompanied them. Mr. Smith has some very sound observations on the marketing schemes of recent years, and the effects of a producers' monopoly. Even in wartime he notes how the vested interests are protected. Control in wartime reveals the same characteristic, he says, as control in peace—it does not imply the subordination of the food trades to popular wishes but the encouragement of monopolistic elements in the trades, and the entrenchment of the monopolies which already existed.

As for national policy in food production, Mr. Smith would favour one based on the encouragement of those commodities of greatest nutritional value, while he is a whole-hearted believer in the work of the industrial co-operative society as the most effective agent in cheaper distribution.

C. S. ORWIN.

The Treasury and Monetary Policy, 1933–1938. By G. GRIFFITH JOHNSON, JR. Harvard University Press. Oxford University Press. 1939. 230 pp. 14s. 6d.

The Golden Avalanche. By FRANK D. GRAHAM and CHARLES R. WHITTLESEY. Princeton University Press. 1939. xv + 233 pp. $2.50.

Both these books deal with certain aspects of recent American monetary policy. The former, which was originally written as a doctor's thesis at Harvard University, and is published in the series of Harvard Political Studies, is primarily concerned with the changes which recent exchange and monetary policies have necessitated in the methods of their control, and especially in the shift of control from the Federal Reserve Banks to the Treasury and the President. It is, however, the incidental studies of the policies themselves which will probably be of chief interest to most British economists. Mr.

Johnson gives a careful, balanced and well documented account of the gold, silver and exchange account policies, which can be recommended to all students of the subject. If his criticism of some of the remarkable experiments made by the Executive, especially in the earlier years, is at times surprisingly mild, at least he never falls into any of the fallacies so common in those years, and steers his way neatly among the many pitfalls which his subject holds.

The point on which there will probably be most disagreement with his conclusions is his (at least partial) condonation of the decision to abandon the gold standard and depreciate the dollar with a view to raising the internal level of prices. On this subject one would have welcomed a discussion of the conditions in which a country can and cannot improve its economic position by depreciating its currency. On the question of the United States Exchange Account, he rejects the theory, current in Europe at the time, that the setting up of the Account was a clever device to outwit the extreme inflationists by sterilising the bulk of the profit on the revaluation of the Reserve Banks' gold holdings, and takes the less charitable view that those concerned with policy were genuinely ignorant of the fact that an Exchange Account with assets consisting solely of gold cannot insulate the internal monetary system from the effects of a further gold influx. On the silver policy, the analysis of the political forces which first compelled its adoption and later permitted its abandonment is an enlightening study of a great democracy in action.

The Golden Avalanche is a more popularly written and less satisfactory book. It suffers both from the fact that it treats the inflow of gold to the United States as if it were the central problem, instead of merely as a symptom of a much wider malaise, and from a remarkable unevenness of treatment, perhaps due to its joint authorship. Some sections of the book give a good popular exposition of the problems and difficulties involved, while others seem to be devoted to an endeavour to justify certain fixed ideas. At least one of the authors seems to take the view that the responsibility for the gold inflow rests, not in any way with the artificial depreciation of the dollar, but with the other countries of the world, which welcomed with joy the fixing of a price for gold by the United States as giving them the opportunity of dumping their stocks of an unwanted metal in exchange for useful commodities or good dollars. This is surely a complete misunderstanding of the points of view of the countries concerned, which, in default of alternative means of making dollar payments, were forced to watch with reluctance and alarm the draining away of their gold stocks. Neither the authors of this book (nor, for the matter of that, Mr. Johnson) make any attempt to assess the probable effects on the exchange value of the dollar and on the United States' balance of trade of a refusal to buy the gold which the rest of the world was obliged to offer.

Equally contentious is the authors' proposed remedy—a lowering of the dollar value of gold abroad, coupled with its maintenance at home, by means of a system of American import duties and export subsidies on gold. It is claimed for such a measure that it would not only check the unwanted growth of the output of gold in the world (apart from the United States), but also facilitate the redistribution of United States gold stocks. The achievement of the first object would depend upon the effects of the measure on international exchange rates; the second could be achieved only by means of either a great rise in American imports, a great fall in exports, or a great rise in her foreign loans—all possibilities which the authors have previously examined and rejected despite the fact that one or more of them must in any case occur as soon as the rest of the world has exhausted its gold stocks.

F. W. Paish.

Studies in Indian Economics. First Series: Aspects of the Indian Tariff, No. 1. *The Burden of the Indian Tariff.* By T. E. Gregory and W. R. Natu. Government of India Press, New Delhi. 1939. 48 pp. Annas 6 or 7d.

The object of this study is to analyse the problems of the tax-burden associated with the various types of duties (*ad valorem*, mixed, specific and alternative) imposed by the Indian Tariff. Professor Gregory defines the meaning of "tax-burden" in this context, and considers the problem broadly, whereas Mr. Natu undertakes a more detailed examination of the part played by each type of duty, the effects of the policy pursued in connection with certain important commodities, and the effects of recent tariff changes on the tax-burden.

Professor Gregory explains carefully that the whole enquiry relates to the "burden or charge actually imposed from time to time by the tariff on the goods actually passing inwards or outwards across the frontier at which the tariff is in force", or—as he calls it—the *de facto* burden of the tariff. No attempt is therefore made to measure the level or height of the tariff, which would involve the impracticable task of attempting to measure its deterrent effects on imports and consumption, although it should not be forgotten that the latter and wider problem is obviously of greater importance from the point of view of the effects of a tariff on the standard of life and on the relative position of various classes of the community. The period examined is from 1926–7 to 1938–9, during which the *de facto* burden at first altered little, then rose sharply, but declined again after 1933–4 until the trend was once more reversed in 1938–9. Professor Gregory points out that the *de facto* burden will vary with the absolute level of tariff rates imposed, the price level of imports, and the distribution of imports among the various categories assessable to tax and between dutiable and non-dutiable goods, and examines to what extent each of these factors has contributed towards the general trend in *de facto* burden.

Mr. Natu emphasises the importance of import duties in the Indian revenue system (their yield accounted for no less than 59 per cent. of India's central tax revenue in 1937–8), and points out that this type of taxation is necessarily regressive in character. He also shows clearly how great have been the effects of the adoption of discriminating protection in India on both the imports of particular, important commodities, and on the general character of Indian imports. The total value of imports of protected goods fell from Rs. 85 crores, which yielded Rs. 16 crores of revenue in 1926–7, to Rs. 16 crores yielding only Rs. 5 crores of revenue in 1936–7, and even in 1937–8, when the burden of these duties fell, both imports and revenue yielded continued to fall. A definite change in the nature of India's imports has occurred. The relative significance of goods of general consumption in the import trade has diminished, whilst imports of raw materials and capital goods have become more important, although the relative importance of luxuries has remained fairly stable.

No attempt is made in the report to deduce from the facts presented what have been the effects of the tariff policy pursued on general economic conditions, the standard of life, and the relative economic position of various classes of the community. But the enquiry provides much material which could be used to throw light on these questions, and which suggests strongly that India's tariff policy has given a definite stimulus to industrialisation, at the cost of the consuming masses. Whether this is or is not a desirable trend depends partly on one's views as to the benefits of industrialisation under Indian conditions, and partly on one's faith in the power of infant industries to grow up.

VERA ANSTEY.

English Theories of Central Banking Control, 1819–1858, with Some Account of Contemporary Procedure. By ELMER WOOD. Harvard University Press. 1939. xviii + 250 pp. $5.

This is a careful and painstaking re-exploration of a well-worked field. Professor Wood's principal sources are the Reports of the Parliamentary Committees which from 1793 to 1858 repeatedly investigated the monetary system of this country. His reading, however, covered also a wide range of contemporary literature, and he is able to set the doctrines which he examines in a background of Pre-Raphaelite minuteness.

Between a General Introduction devoted principally to questions of technique and a Conclusion which summarises the theories reviewed, he packs a survey of all the major monetary controversies of forty vigorous years. For convenience, he divides his subject into two chronological sections, with 1844 as the watershed between them;

but the questions asked in both periods are very similar, centering round the eternal problems of the effectiveness of Bank Rate and the right criteria for Bank policy.

It was a natural consequence of the Bullion Report, when that document permeated current thought about Bank Policy, that chief emphasis was placed upon influences on the circulation. Only after the disillusionment of 1825 did the importance of money-market rates really become apparent—partly as a reaction from the necessarily discarded idea that Bank Rate itself could control the volume of discounts. And even then the channel of influence was thought to be the loan of capital rather than of reserve cash.

This latter misconception arose from a failure to realise the importance of bankers' balances. Professor Wood suggests, probably correctly, that this derived chiefly from their recent appearance and relative unimportance, compared with Bank Notes, as reserves. By a natural consequence, emphasis continued to be placed on Bank Rate, rather than on open-market operations, as the means of control. And equally naturally, this apotheosis of Bank Rate deluded the Currency School into relying upon it to correct instantaneously the appearance of exchange disequilibrium.

Rather outside these central issues lay the problem of Bank of England control over the country banks. It is here that Professor Wood is most original. The stock argument has been that the Bank of England could do little to control the country bankers, because they maintained insignificant reserve balances, and were not bound by any conventions to rigid reserve ratios. As against this, the Bullionists argued that country-bank notes were by custom exchangeable for Bank of England notes, and that country banks were also obliged to exercise restraint lest they should raise local prices above London prices. Such price-changes might indeed have caused a locally unfavourable balance of payments, but they were inadequate as a preventive, since they would follow, and not accompany, any local inflation of credit. Professor Wood adopts this argument, but then brings to light an alternative significance of London to the country banks; it was the source of their liquidity. Since the Bank of England could almost always contrive to make London bearish, or at least hesitant, when it set out to do so, this alone sufficed to check the exuberance of the country. It is a neat point, and provides an attractive theoretical backing for the instinctive feeling which study of the period usually evokes.

On this, as on all his problems, Professor Wood marshals, labels, and explains the discordant theories with patient care. His labours have produced a work of reference of material help and value. It cannot be said, however, to make easy reading. Its style has the flatness which betokens overmuch midnight oil and seems characteristic of the genus "thesis". Moreover, the inevitable condensation of the argument involves a greater degree of concentration than is altogether easy in, shall we say, blitz conditions. Nevertheless the specialist will be grateful for the exhaustive researches which are here embodied, and not least for the eighteen charts in which are summarised the most important features of the innumerable statistical appendices of the Parliamentary Papers. On these alone the fascinated reviewer could write a volume. Finally, the General Conclusion should yield an almost inexhaustible quarry of essay-subjects to the hard pressed tutor.

J. K. HORSEFIELD.

Economic Problems of To-day. By W. ARTHUR LEWIS. Longmans, Green & Co. 1940. xii + 175 pp. 5s.

Civilisation consists of more than mere institutions, but few will deny the importance of recent institutional growth, both economic and political. Mr. Lewis's simple introduction to the economic problems of to-day and his analysis of the solutions adopted in various countries are a highly successful attempt to present the matter objectively and enable the average citizen to get a glimpse through the clouds of propaganda which surround him. The author has made every endeavour not to mislead the reader by his own political attitude, and difficulties inherent in the problems discussed are faced so that there is no dangerous simplification.

The first part of the book deals with the nature of the economic problem which is illustrated from British experience. The discussion of the allocation of resources contains an excellent description of the operation of the price mechanism but it is explicitly stated that the process works too slowly to solve the problems of a change-over to a war economy and for the readjustments made necessary by peace. Mr. Lewis's support for public investment as a remedy for depression when private investment is too small to maintain full employment follows logically from this position.

Problems of property, international economics and unemployment are all dealt with as positively as possible. Tariffs are discussed without heat and the trade cycle with estimable academic calm. A general explanation of the relation of the size of the population to the problems of migration, unemployment and the standard of living should, however, have been given. In the discussion on the trade cycle some distinction between a recovery and an inflationary boom would have been helpful and an admission of the crying need for much more empirical work in this field welcomed. Mr. Lewis is, however, right in stating that the smoothing out of cyclical fluctuations is now a political rather than an economic problem. But the political and administrative problems are so serious that it is doubtful whether the future can be viewed with quite his equanimity.

The solutions adopted in Russia, Germany, France and the United States in recent years are described in the second part and the reader is given a good general perspective, which should help to clear away the ignorance and prejudice about conditions in these countries and to show the interdependence of forms of political and economic organisation. In dealing with communist economics Mr. Lewis explains that many solutions have been tried in the last twenty years and suggests that a study of the economic history of Soviet Russia would provide an excellent grounding in the principles of economic theory. The point is made that central planning or socialism need not have a monopoly of the prevention of slumps by planning, as even in a private economy the government can prepare its plans for public works carefully.

The economic policy of the Nazi régime in Germany is shown to have been dominated by two aims, the first to reduce unemployment and the second to increase the military strength of the country. Unemployment was solved by large government expenditure and the greatest part of this expenditure was on armaments. Indeed, the study of the system is one of a war economy. An excellent summary of the Blum experiment and an explanation of the misguided wages policy are given in the chapter on France and the conclusion drawn is that the experiment will not have been wholly in vain if it stimulates a re-thinking of labour strategy. In the chapter on the United States Roosevelt's recovery experiments are analysed and it is pointed out that recovery was less than in Great Britain in spite of the great public works expenditure. An economic policy will vary, of course, in effectiveness according to its environment. Mr. Lewis explains the many difficulties with which President Roosevelt has had to contend but criticises much of his economic policy. The different solutions of economic problems adopted in Great Britain and abroad are on the whole explained with great lucidity and fairness.

J. C. Gilbert.

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Rationing of Purchasing Power to Restrict Consumption

By J. J. Polak

1. In a highly developed war economy, rationing of consumers' goods is not only a means of distributing a few particular commodities, the supply of which has run short. It constitutes also an element of war-time price policy, as the most effective way of enforcing maximum prices. It is an element, as well, in the financing of the war, since it restricts the consumer's outlets for spending money. It often leads to discoveries of insufficient nutrition (unused coupons) and thus to measures of policy to maintain a certain standard of life for all consumers. Under these four aspects of quantities, prices, government finance and minimum consumption, the system of consumers' goods rationing will be reconsidered in the present paper. From an analysis of its merits and disadvantages a system of rationing will be developed which, from a theoretical point of view, might be termed ideal.[1]

2. Rationing[2] is introduced when there is a severe shortage of a commodity essential to consumers. This fact may lead one to regard shortage as *the* cause of rationing. In doing so, one overlooks an essential condition, in the absence of which rationing, even where a shortage exists, cannot claim to be a rational form of distribution. This condition is the existence of substantial inequalities of income.

Inequalities of income make rationing, in case of shortage, necessary from two sides:

(1) Inequality implies the existence of a group of poor, for whom even a small rise in price would lead to a fall in consumption below what is considered a minimum level.

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[1] The essential ideas of this paper were published previously in *De Economist*, February, 1940, pp. 102–121: "Rantsoenering van Consumptiegoederen. Enige economisch-theoretische opmerkingen."

[2] "Rationing" in this paper always refers to the rationing of consumers' goods.

(2) Inequality implies the existence of a group of rich who, owing to their very low marginal utility of money, can push up almost to infinity the prices of a few essential commodities.

The consumers in an ideal socialist community would not gain if, when severe shortage of one commodity occurred, they were rationed to one *n*th of the available supply per head. It is obvious that the community as a whole would benefit from a rational—in the technical sense—distribution of the scarce commodity, at a higher price.[1] The higher price may leave consumers in this community with too much, enough, or too little money to buy the other commodities at the old prices, according to whether the elasticity of demand for the one scarce commodity is larger than, equal to, or smaller than unity. But the change in the amount of money available for other commodities is balanced by an equal change in the opposite direction in the resources of the state. If all production is in the hands of the state, any loss of purchasing power for the public is a direct gain to the state, and vice-versa. If production is in private hands and equality maintained by a 100 per cent. excess income tax, the compensation will come via tax receipts. In either case, if there is no concomitant change in the expenditure of the state, the change in the amount of money available for other consumption goods can exactly be met by a reduction of taxation per head, or a rise of the general income level, if the elasticity of demand for the scarce commodity is smaller than unity; or by a rise in taxation, or a reduction in the general income level, if the elasticity is greater than unity.[2]

3. It follows that the abolition of inequality of incomes is an alternative to rationing. It will be assumed in this paper that this complete solution is considered impracticable or undesirable.[3]

Now in a war economy—if inflation is prevented or kept down to a moderate pace—a certain equalisation of available resources is necessary to finance the war effort. It may be accomplished in the form of high, and highly progressive, taxation, voluntary savings or compulsory savings. Prices will, consequently, in cases of scarcity, rise less than they would have done if the pre-war inequality of resources had been maintained. But *much* less ? Sufficiently less for the necessities not to be all absorbed by the rich ? The negative answer seems indicated. Progressive taxation, even with compulsory saving, usually maintains a considerable inequality of incomes. The Keynes plan leaves £650 to the earner of an income of £1,000 a year, and £3,600 of an income of £10,000 a year.[1] The amounts left over are sufficient for the recipients of these incomes to compete with the lower income groups for a few essential commodities, whilst restricting consumption of " luxuries ". Mr. Keynes' proposals are not, therefore, as they are advocated to be,[2] an alternative to rationing.[3]

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[1] Such a statement of course implies the assumption that, with equal incomes, the marginal utility of money is the same for all persons.

[2] It is theoretically possible to distribute the change in taxation in such a way as to make *every* consumer benefit as compared with a system of rationing; in that case the benefit to the community of a rise in price as compared with rationing becomes independent of any interpersonal comparison of utility. This proposition is essentially the same as that any indirect tax can be replaced by a direct tax of the same yield to the benefit of *all* taxpayers.

[3] If, however, it could be introduced, the scheme outlined in this paper would be entirely applicable to such a situation. It would, in that case, deal with all consumption goods, and not with "necessities" only.

4. Rising prices may be considered undesirable for other reasons than that the poor cannot pay them. (*i*) A persistent rise in prices may lead to the anticipation of its continuation, with its consequences of flight in commodities and runaway inflation. (*ii*) Where prices are very unstable, ordinary cost accounting on the basis of past outlays is devoid of any sense, and the entrepreneurs' price policies tend to become irrational. (*iii*) The money costs of the state's expenditures automatically increase; to make revenues rise correspondingly, rates have to be adjusted (except for levies on an *ad valorem* basis). (*iv*) Finally, high prices generally result in high profits, i.e. they tend to increase the existing inequality of incomes.

All these objections to rising prices, each of them of considerable weight, have to be borne in mind when a scheme allowing free movements of prices—which in war-time necessarily means freedom of prices to rise—is suggested. This paper proposes such a scheme. It will be shown that under the scheme price rises will be relatively limited—which diminishes the risks of (*i*) and (*ii*) as compared with a *laisser-faire* inflation—and that the scheme takes care entirely of the effects under (*iii*) and (*iv*).

5. It is obvious that rationing involves a loss, since it

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[1] J. M. Keynes, *How to Pay for the War*, p. 40.

[2] *Ibid.*, Chapter VIII.

[3] This is also very obvious from the fact that, though Mr. Keynes' tax proposals have already been passed by, nobody in England is suggesting that rationing is now no longer necessary.

deprives consumers of free choice. The loss is not serious as long as only a few essential commodities are rationed, the consumption per head of which shows little difference from one person to another. But when the consumption of many commodities has to be severely restricted, large scale rationing involves a great destruction of possible satisfaction. Moreover, it becomes technically more and more complicated. Its extension, therefore, tends to be slow; prices rise and inflation goes ahead.

6. It seems imperative to search for a system with the three following characteristics: (*i*) It should as far as possible preserve the consumers' free choice; (*ii*) it should eliminate, in the market of necessities, the higher purchasing power of the rich; (*iii*) it should easily be extended to cover a wide variety of goods.

These three objectives are realised in a system in which (*i*) purchasing power to buy "necessities" (to be defined later) is rationed; (*ii*) prices are left free; (*iii*) excess prices are absorbed by taxation; and (*iv*) when necessary, bonuses are used to enable everybody to buy the minimum ration of necessities. This system will be called "purchasing power rationing", since its most essential element consists in the provision that consumers are allowed to buy necessities up to a certain money value.

In a few cases where specific rationing became too destructive of satisfaction or too burdensome to administer, tentative steps have been taken towards the form of rationing indicated above. In the last war, as in the present, the rationing of meat in Great Britain was by value rather than by quantity; each consumer was entitled to buy for 4d. (the value was changed from time to time) a week whatever kind of meat he liked. For the rationing of clothing, the point system, now in force both in Germany and in Great Britain, is similarly designed to leave the consumer free choice within a restricted total—though the total is not exactly one of money expenditure.[1] Recently, Mr. Kalecki has gone much further in proposing a scheme to restrict retail purchases to a certain value per head.[2] His proposal is not, however, designed to leave the consumer freedom of choice, but only to simplify the rationing mechanism by restricting the variety of coupons. Services, for instance, are excluded, since they can, when scarce, easily be rationed directly. Moreover, the system does not intend to supplant existing rationing, but to act as a restriction on the purchase of unrationed goods.[1]

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[1] In Germany the system is refined in this way, that only half the ordinary number of points is required if the material used is synthetic. Except for this detail, the system, in comparison with purchasing power rationing, obviously favours the rich, who are able to buy good quality clothes without giving up more points.

[2] M. Kalecki, "General Rationing". Institute of Statistics, Oxford, *Bulletin*, vol. 3, No. 1, January 11, 1941, pp. 2–6.

It will be seen that none of these schemes goes far to reach the three objectives mentioned at the start of this section.

7. Purchasing power rationing has no place under the "pre total war" assumption that only a few consumers' goods are scarce. It is applicable to the other extreme: the situation where everybody's consumption of all essential commodities has to be reduced to what is considered the social minimum. In the following, we consider this situation. It necessarily develops in an all-out war effort, where the maximum of resources is diverted to war purposes and, consequently, only a minimum is left for consumption. Evidently, the necessity of reducing consumption affects *all* goods and services that compete with the prosecution of the war. But for the non-necessities there is no reason to obtain the reduction by a rationing system, general or specific, except for the subsidiary reasons against price rises stated in 4. The scope of purchasing power rationing is, therefore, determined by the commodities and services which enter into the social minimum—in so far as they are scarce. It may be doubted whether this latter qualification will have much practical meaning: all necessities are scarce in wartime. Hereafter, we therefore employ "necessities" in lieu of "the commodities and services subject to purchasing-power rationing".

It is postulated that the following four requirements must be fulfilled if a system of rationing is to be adequate from a military, social and war-finance point of view:

(*i*) Consumption of necessities should not exceed the amount available. Obviously, availability is not meant in a physical way, but indicates a decision, based on present stocks, expected future supplies, present and future needs.

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[1] Mr. Kalecki wants "some essential commodities" to be continued to be rationed in the ordinary way (*ibid.*, p. 6). *The Economist*, in its discussion of the proposal (February 1, 1941, p. 142), emphatically states that it should not be considered as an alternative to rationing; that it is a financial device and fails to determine the physical distribution of the commodities, for which specific rationing should be maintained.

(*ii*) Consumption of necessities should not fall short of the amount available. If the latter amount is determined with a view to the population's objective needs, it is undesirable that, in particular for lack of purchasing power, less should be bought.

(*iii*) Every consumer should be able to buy his share of necessities: a minimum standard of life should be reached by each consumer.

(*iv*) Obviously, as the war goes on, the government may decide that the present rate of consumption of necessities cannot be maintained. In the short run, the objective absolute consumption minimum is far below conventional standards. If the minimum initially accepted is determined partly on a physiological, partly on a conventional or psychological basis, it will prove compressible. The fourth requirement is that, if such compression is effected in order to give the government command over more commodities, the purchasing power necessary to buy them is at the same time transferred to the government, so that no problem of "war finance" is left with respect to these commodities.

It will be shown that purchasing power rationing, operated as described below, fulfils these four requirements.

8. We consider the introduction of the scheme. No rationing of any kind is, we assume, in operation. At a certain moment it is considered necessary to reduce the consumption of those who consume more than a certain minimum, in order to set labour, raw materials and tonnage free for war purposes. To this effect a regulation is introduced allowing each person to buy "necessities" (commodities falling under the scope of the arrangement) up to a certain value (the "ration value"). Value coupons of small denominations are handed to each consumer. At the same time, some form of relief or subsidy is introduced to level up the resources of those too poor to buy the minimum of consumption. The consumption of the poor will somewhat increase, that of the rest of the population will considerably decline—the magnitude of the decline being determined by the number of shillings in the ration value. The net effect will be made such as to set resources free. There will be no effect on prices, provided that these resources are immediately absorbed by the government and a concentration is performed in the industries where demand has

been greatly reduced to prevent a rise in overhead costs being put on the price.[1] The ration value can therefore be determined at $\frac{1}{n}\Sigma q_i p_i$, where n is the number of persons, q_i is the available quantity of each necessity i, and p_i the pre-scheme price of each necessity i. It is assumed that the system is introduced in order to free resources in general, rather than to reduce the consumption of particular commodities. Hence, the available quantities q_i are not determined in advance and, indeed, cannot be exactly known in advance except on the basis of detailed information regarding income elasticities of demand. Yet the ration value can be determined. Not by adding up quantities times prices of a great number of commodities, but by determining $\Sigma q_i p_i$ directly. If the value of the output of the industries essential for war is y; if an amount x is considered sufficient to guarantee a certain minimum standard of life at existing prices[2]; and if, furthermore, $z = y - nx$ is considered an adequate provision of resources for war, the ration value will be x and consumers themselves will determine how large the q's will be.[3] In that way, the total of the q's is fixed ($\Sigma q_i p_i$[4]). It should be reached by demand, and cannot be exceeded. If consumers have too large a value ration to buy $\Sigma p_i q_i$ at existing prices, the p's, not the q's will rise.

If a certain measure of specific rationing was in effect before the introduction of this scheme, certain price changes will occur, as these commodities are now freed within the limitations of the value ration. These price changes are of the same nature as those that will take place when, under the operation of the scheme, a commodity becomes more scarce. This case will be taken up presently.

9. During the operation of the scheme, the situation may deteriorate in two ways:

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[1] To be precise: the variable costs per unit are assumed to be constant over a sufficiently wide range. With perfect competition, this would suffice to keep prices stable even without "pooling" of industries suffering from reduced activity.

[2] It is perhaps desirable to allow a slightly higher ration value in consideration of the fact that the low income groups will not be able to use this margin, whereas the higher income groups will not use it to buy larger quantities, but to pay the slightly higher prices they are used to pay for the same commodities.

[3] It is obvious that if z and x are determined independently—say by the Ministry of War and the Ministry of Health—the equation $y = z + nx$ is very likely not to be fulfilled; indeed, it seems probable that the right hand member will exceed y. When one speaks about resources "necessary" for war or for health, this necessity can never be meant in a purely objective way, but always refers to a compromise between the various pressing needs.

[4] Σq_i obviously does not make sense.

(*a*) It may prove necessary to reduce the quantity of a particular necessity.

(*b*) A necessity may show a rise in costs, without a reduction in its quantity being necessary for war purposes.

(*a*) *Quantity reduction.*

10. The quantity available of necessity A is reduced. This situation can be met by specific rationing without a rise in price by cutting the ration to the quantity of A available per head: the market is brought into a new equilibrium in this way (an equilibrium provided consumers and dealers desist from circumvening the rationing prescriptions). Under purchasing power rationing, however, consumers will bid the price of A up, till a new equilibrium for their consumption as a whole is reached. Is this price rise undesirable?

(*i*) From the point of view of rational consumption, it is definitely not. The high price truly reflects the scarcity of A. Since, with respect to necessities, there are no longer poor and rich—everybody being allowed and being able to exercise the same purchasing power on necessities—the common "inequality of income" qualification of the rationality of free prices has not to be made. The equilibrium reached after a rise in the price of A is founded on free choice and not on a rationing edict; there is no tendency for the consumer to circumvent it. (*ii*) The producer of A, however, is bound to make a scarcity profit. This is in itself undesirable. It is a logical element in the scheme that such profits should be taxed away. Various devices are available for this purpose. The Excess Profits Tax may be used in the ordinary way. It may be simplified and fortified by a standard EPT assessment at quantity sold since rise in price × price rise. An excise of the magnitude of the price rise may be put on A; or, in the case of imported articles, an import duty. Whatever the form chosen, it is possible to collect a tax (for simplicity to be indicated as EPT in what follows) of the amount $q'_A \Delta p_A$ (where q'_A represents the reduced quantity of A) from the producers.

If this is done, the price rise owing to scarcity leaves no major harmful effects (cf. section 4); it has, on the other hand, a definite advantage to the consumer. It should be borne in mind that the rise will be quite moderate owing to the fact that, with respect to necessities, there are no rich to bid up prices almost unlimitedly.

Two cases have now to be considered.

(*a*) *The elasticity of demand for A is smaller than unity.*

11. More money will be spent on *A*, less will be left for the other necessities *B*—*Z*. The available quantities of them cannot be bought in full.[1] This situation violates our second requirement. A solution can be found by a sufficient increase of the allowed value ration. This helps the rich, but not the poor who, even if allowed to, cannot expend a greater value ration. Thus requirement (*iii*) would be violated. To allow everybody to purchase the available quantities of *B*—*Z* a bonus is necessary. Its magnitude should be the increased expenditure on the reduced quantity of *A*, *minus* the reduction in expenditure due to the decrease in the consumption of *A*:

$$\text{Bonus} = q'_A \Delta p_A - (q_A - q'_A) p_A. \qquad (1)$$

It may be given in various forms. The necessary amount of money may be added to the value coupons. Or these coupons may be sold to the consumers below their par value, be used by them at par for purchases, and be redeemed from the retailer or the wholesaler at par.

The net result for the Treasury is equal to the EPT yield *minus* the bonus. It follows from the above that it is equal to $(q_A - q'_A)p_A$, i.e. the amount the government has to spend to buy the withdrawn quantity.[2] [3] Requirement (*iv*) is thus automatically fulfilled.

(*b*) *The elasticity of demand for A is greater than unity.*

12. Consumers are left with too much money to buy *B*—*Z* at existing prices. Three solutions are possible:

(*i*) The value ration is left unchanged; prices of *B*—*Z* are bid up till the excess purchasing power is absorbed. The government collects the identical amount as EPT from the producers of *B*—*Z*. This is a very roundabout way for the consumers to pay the excess to the government. Since no purpose is served by the rise in price of *B*—*Z*, the secondary arguments against price rises militate against this method.

(*ii*) The value ration is lowered; consumers are left free to spend the liberated purchasing power on non-necessities. This, however, violates the fourth requirement: the government does not levy enough money to pay the quantity of A withdrawn from civilian consumption.

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[1] At existing prices. It is taken for granted that it is not considered desirable to subject the whole level of prices to a deflationary pressure.

[2] At the old price. If the government has to pay the new, higher price $p_A + \Delta p_A$, the EPT yield will be correspondingly higher.

[3] In the earlier paper (cf. page 223) it was stated that the tax yield would equal the cost of the bonus. This represents the limiting case where the elasticity of demand tends to 0, and $(q_A - q_A)$ therefore equally tends to 0.

(*iii*) A negative bonus. The consumer is obliged to pay the estimated excess on obtaining his value tickets; or, if the tickets are given a money function, they are sold above par; or a head tax is imposed, or a sales tax on all necessities. This third solution is obviously to be preferred. It is symmetrical with that where the elasticity is <1, which has advantages to be shown presently (15). Under this system, the total receipts of the government on account of EPT + negative bonus are again equal to the value of the quantity withdrawn.[1]

13. From (1), the magnitude of the bonus may be derived in terms of the elasticity of demand (η). For a small change in q (the suffix A is omitted) it is equal to[2]:

$$\text{Bonus} = pq\frac{dq}{q}\left(\frac{1}{\eta} - 1\right).$$

That is, for a 1 per cent. reduction in the quantity, the bonus has to be 1 per cent. of the value spent on $A \, x \left(\frac{1}{\eta} - 1\right)$.

This is obviously negative when $\eta > 1$.

A formula might be devised to cover large (finite) changes in q. The actual knowledge of η is, however, insufficiently accurate to make such refinements worth while.

14. The correct magnitude of the bonus may also be determined in retrospect. If the available quantity of a large range of commodities is not absorbed, it shows that the bonus is too small. If prices of many commodities, the supply of which has not been reduced, show rises (apart from rising costs) it is an indication that the bonus, if positive, is too liberal, or, if it is negative, that it is not a sufficiently large negative quantity.[3]

15. The majority of necessities will have had an elasticity of demand <1 before the introduction of the scheme. In fact, it is not uncommon to define necessities in that way.

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[1] The simple formulæ of 11 hold; since the elasticity of demand >1, $qdp < pdq$, and formula (1) gives a negative result for the bonus.

[2] This is easily derived from (1).

[3] If B is a direct substitute for A, a reduction in the quantity of A available will lead to a rise in the price of B, if its production cannot be expanded. Hence the fact that *some* commodities rise in price without a reduction of their available supply is no proof of an excessive bonus.

But the introduction of purchasing power rationing changes elasticities. The pre-scheme possibility for those with an income above the minimum to withdraw money from luxuries falls away. Under the scheme, they can afford a small elasticity on *some* necessities, but not on all. For all necessities together, the proposition that the average elasticity of demand for consumption goods as a whole = 1 is rigidly true, since it is not necessary to reckon with the ordinary qualification: saving. There is no reason to save value coupons.

It follows that the occurrence of a cut in the consumption of necessities with an elasticity larger than unity is as probable as one where the reverse is the case. As the consumption of one commodity after another has to be restricted, positive and negative bonuses will be necessary with equal probability. This leads to a conclusion which, though in the nature of a theoretical anti-climax, is of great practical value: when a great variety of cuts occurs, it may be assumed for reasons of practical policy that the positive and negative bonuses cancel out. The bonus system, with its inevitable technical complications, may be left out of the picture with respect to the case of scarcity of necessities.

It will be necessary, however, to check up periodically whether this simple assumption is approximately fulfilled, by the method to determine the adequacy of the bonus described in (14).

(*b*) *Rise in costs.*

16. One of the necessities, say Z, may rise in cost. Since, as will be shown, there is no ground for a rise in wages in a country applying purchasing power rationing, this will in particular be the case if Z is imported. For instance, the world price of Z may have risen. This need not entail the necessity to reduce the quantity of Z bought. Indeed, if tonnage remains available to import it, it is probably desirable that consumption should not be reduced.[1] But the consumer cannot buy the same quantity at the higher price and yet purchase the old quantities of the other necessities $A - Y$. It is obvious, therefore, that he has to be subsidised in some form or another. Two major forms of subsidy are possible:

(1) An *income bonus* (or tax reduction, or any other form of *general* subsidy) of the magnitude $q_z \triangle p_z$.

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[1] Assuming that the increased amount of foreign exchange can be found.

(2) A *direct subsidy*, paid by the government to the importers of Z to keep the price down at the old level.

Obviously, the cost of both policies to the government is the same.

It depends on the specific situation which of the two forms is preferable.

17. Let us first assume that, though the total quantity of the consumption of necessities is fixed, a switch over from the production (import) of one commodity to that of another is possible. Then the income bonus system is preferable. A full compensation of the rise in price of Z represents to the consumer an over-compensation in terms of utility, as he switches from Z to other necessities.[1] In other words, by having Z sold at an artificially low price, the government induces consumers to irrational consumption. Or, again in other words, and in terms of money: whereas a direct subsidy on Z has to be as large as $q_z \triangle p_z$ to guarantee the consumer an undiminished utility, an income bonus of a smaller amount will achieve the same objective.[2] In this way, the benefit of the income bonus system can be transferred to the Treasury.[3]

18. The reverse assumption may be made, viz. that the consumption of each individual necessity is limited. This will be the case when necessities compete directly with war demands for specific resources. It may be so that e.g. shoes for civilian demand can only be delivered in larger quantities by reducing deliveries to the army; such a reduction cannot presumably be admitted just because the consumer switches his demand to shoes as, say, imported meat goes up in price.

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[1] This follows from the discussion concerning a correct index number of the cost of living and, accordingly, of real income. As well known, an index of real income determined in the ordinary way

$$\begin{array}{c}\textit{money income}\\ \dfrac{\Sigma q^0 p^1}{\Sigma q^0 p^0}\end{array}$$

overestimates the loss in utility when for all commodities i

$$p_i^1 \geqq p_i^0 \text{ but } p_1^1/p_1^0 \pm p_2^1/p_2^0 \pm p_3^1/p_3^0 \cdots\cdots$$

[2] Expressed in this way, the proposition follows directly from the "theorem of Dupuit" to the effect that an indirect tax yields less revenue than a direct tax imposing the same burden on the consumer.

[3] The magnitude of this benefit can be expressed in theoretically exact terms on the basis of an ideal cost-of-living index (cf. *e.g.* A. Wald, "The Approximate Determination of Indifference Surfaces by Means of Engel Curves, *Econometrica* VIII (1940), p. 144). But such a formula is useless in practice, since one does not know the parameters of the consumption equations for $A - Z$. The importance of the matter at issue would be greatly clarified, if some idea of the order of magnitude of this benefit could be given as a function of (1) the spread on the rise of prices and (2) the flexibility of demand as relative prices change.

If, when the price of Z rises, the consumption of none of the commodities A—Y can be expanded, an income bonus will only push all other prices up. The loss of consumption is not made up in this way; less than previously is consumed of Z, but not more of A—Y. A new bonus has to be added to cover the rise in price of A—Y. Prices of A—Y will rise further, and consumption of Z is somewhat increased as its relative price falls. Evidently, the total bonus to be given to make up for the loss in utility is equal to $\frac{\Delta p_z}{p_z} \Sigma pq$. If the price of Z rises by 10 per cent., the bonus has to be 10 per cent. of the *total* value ration. In that way, all prices rise by 10 per cent., the real price of Z comes at its old level, the consumption of Z equally. The total net cost to the government is not more than $q_z \Delta p_z$, since the bonus on A—Y is recovered from the EPT on these commodities.[1]

It will be seen that in this case, by the government paying out large sums in bonuses and recovering nearly the same amount in EPT, the net result on consumption and government finance (if we disregard the cost of administration!) is exactly the same as if the import of Z had been directly subsidised. Administrative expediency, and the secondary arguments against a rise in prices point in this case to the advisability of a direct subsidy.

19. Whether a rise in the price of a necessity should be met by a subsidy to that commodity or by an income bonus thus depends on the nature of the limitation to the consumption of necessities. Circumstances will determine which of the two systems has to be chosen. No over-all choice is, however, necessary. Where there are wide possibilities of substitution, the income bonus system may be chosen in principle. But if the price of one particular commodity rises, which has a close substitute the supply of which is rigidly unexpandable, a subsidy should be preferred in this case. There is no reason why the two systems should not

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[1] It should not be inferred that if all imported commodities Z, Y, X . . . successively rise in price by 10 per cent., the whole price level would by this system be jacked up by 10 per cent. *each time*, and thus quickly rush to unimagined heights. For the adjustment to the 10 per cent. rise in the price of Z has led to a 10 per cent. EPT margin (*e.g.* an import duty of that magnitude) on Y; and any rise of the world price of Y up to 10 per cent. can be met by a lowering of the duty without any effect on the national price of Y. Consequently, the income bonus system in a situation where the supply of each necessity was rigidly restricted would lead to a relative rise of the whole price level of the same magnitude as the highest relative rise in price of any one commodity, and not more. This may, all the same, be quite large, undesirable, and, as shown, unnecessary.

be blended according to the nature of the commodities under consideration.

20. We have up to now considered two separate cases: (*a*) the available supply of necessity A is reduced; (*b*) the cost of Z rises. What if the two imaginary necessities A and Z merge into one: N, which undergoes both adverse changes?

It is obvious that this reduces the amount of governmental action required. For (*a*) leads to rise in price and to the existence of an EPT margin, which automatically takes account of part of the bonus necessitated by (*b*). On the other hand, the rising costs—if met by an income bonus and not by direct subsidy—lead to a reduction in quantity, which may exceed the cut in supply that would have been necessary under (*a*).

If the income bonus system is followed, the two changes work out symetrically like this:

Change	*Quantity*	*Price*
(*A*)	$\Delta_{(A)}q$	$\Delta_{(A)}p=\frac{p}{q}\Delta_{(A)}q\cdot\frac{1}{\eta}$
(*B*)	$\Delta_{(B)}q=\frac{q}{p}\Delta_{(B)}p\cdot\eta$	$\Delta_{(B)}p$

where $\Delta_{(A)}q$ and $\Delta_{(B)}p$ are original changes and $\Delta_{(B)}q$ and $\Delta_{(A)}p$ are the effects. These formulæ show that if $\Delta_{(A)}q>\Delta_{(B)}q$, $\Delta_{(A)}p>\Delta_{(B)}p$. We can thus say that the effects of $(A)\gtrless$ the effects of (B) (or : $(A)\gtrless(B)$).

The change with the larger effects determines the situation. It follows that if $(A)>(B)$, there is no place for a bonus; if $(B)>(A)$ the bonus should be $\Delta_{(B)}p-\Delta_{(A)}p$.

With the subsidy system $\Delta_{(B)}q$ is not known, since the consumer is not subjected to the rise in price $\Delta_{(B)}p$. But, since both $\Delta_{(A)}p$ and $\Delta_{(B)}p$ are known, the correct bonus under $[(A)+(B)]$ can be determined in the same way.

21. We can summarise the operation of purchasing power rationing:

(*i*) each consumer is allowed to spend a certain value ration of money on necessities;

(*ii*) the value ration need not be adjusted on account of rise in prices resulting from reductions in the quantities of necessities available, except when it is found (which is not *a priori* probable to happen to any great extent) that the value ration is too large or too small to buy the available supplies of necessities at existing prices.

(*iii*) rises in costs of necessities, in so far as they are in excess of rises in prices due to reductions in the quantities available, are met either by a bonus on the value ration or by subsidising the individual commodities.

22. A new system to effectuate the necessary reduction of consumers' purchasing power would be very difficult to introduce if the whole existing machinery had to be thrown overboard. It may be good, therefore, to consider the compatibility of the scheme outlined with other wartime measures to reduce consumers' purchasing power.

23. It is obvious that heavy taxation of incomes above the minimum remain very necessary to restrict expenditure on non-essential commodities. The money left over after taxation, voluntary savings (compulsory savings are dealt with below) and the value ration can be spent on non-necessities. Since the quantity of these is necessarily restricted, a rise in price will occur. It is desirable to maintain this rise within bounds. (*i*) With respect to non-essentials, too, it is unpleasant (to say the least) for the person of moderate means to be able to buy almost nothing for his "free" money, whereas a rich person can buy all he wants. (*ii*) It is confusing to upset a customary system of prices in the sense that the prices of necessities are kept within limits whereas those of non-necessities rise out of any proportion. This creates an unrealistically sharp distinction between the two groups, which will make small adjustments of the line of demarcation difficult. (*iii*) The disturbing effects of sharp price rises on accounting practises should be kept in mind. (*iv*) Finally, any loopholes in the Excess Profits Tax (and these are especially dangerous where the notion of costs becomes vague owing to heavy price fluctuations) have an undesirable distributional effect.

24. It is generally realised by now (and it is very clearly brought out by the recent "acceptation" of the Keynes Plan by the British Chancellor of the Exchequer) that the advantage of compulsory savings *during the war* lies in its high taxation of moderate incomes, whereas the fact that these taxes are refundable at some date after the war, apart from making them more palatable now, affects only the post-war distribution of wealth. The taxation element in compulsory savings is as useful as any other form of taxation.

25. Voluntary savings in the same way reduce the purchasing power competing for non-necessities and their

stimulation is just as necessary under a system of purchasing power rationing as under specific rationing.

26. It is possible to continue some measure of specific rationing under the scheme outlined in this paper. This may be useful by way of introduction; purchasing power rationing may first be applied to commodities not as yet subject to rationing. There is technically nothing against the continuation of the two systems together. But the very essence of purchasing power rationing is the abolition of all specific rationing. No system is needed to regulate the physical distribution of commodities—the consumers can take care of that themselves.[1]

27. As the available quantities are reduced, unchanged value rations will command less goods. And the value ration is *not* adjusted on this score. This embodies the general conviction of students that money incomes should not be increased to make up for rises in price due to scarcity. Since the scheme contains bonuses to the value ration when costs rise, it eliminates any further necessity to adjust general money incomes on a cost-of-living basis. A wage stop is in this way made possible. If it is applied, the major source of rises in price originating within the country is removed.

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[1] It will be clear why under the Kalecki system specific rationing is still necessary; his value ration is put so high that a large part of the population cannot spend it; a considerable degree of inequality of income is thus maintained with respect to the commodities subject to general rationing. Hence free choice and free prices are (socially) unworkable under the Kalecki system.

Economic Incentive in Wartime

By F. W. Paish

The effect of taxation upon the amount of paid work which the taxpayer will prefer to do has been frequently discussed in economic literature; but in view of the unprecedented level to which direct taxation in this country has now risen, the subject has attained a degree of practical importance which is thought to justify the following attempt to re-examine some of the issues involved.

The simplest way to approach the question of the effect of taxation upon willingness to undertake paid work seems to be to look at its effect upon the demand for "leisure", that is to say, upon a man's demand for the use of his own services. The type of income change which has most usually been studied is one involving an equal change in aggregate and in marginal remuneration, such as is produced by a change in rates of hourly wages or by a change in a flat rate income tax. In such cases it has been shown[1] that the result may be either to increase or to decrease a man's demand for leisure. This indeterminancy is due to the fact that this type of income change gives rise to two distinct and opposing incentives, either of which may prove in any given case to be the stronger.

The first of these arises from the change in aggregate income. Since leisure is normally complementary to other goods, it is highly probable that the income elasticity of demand for it is positive, so that, when a man can afford fewer other goods, he can also afford less leisure. Thus a decrease in aggregate income will normally be followed by a decreased demand for leisure, the extent of the decrease being dependent on the income elasticity of demand.

Secondly, a change in hourly rates of pay or in a flat rate income tax will also increase or decrease the marginal income per hour, or, in other words, will decrease or increase the marginal cost of leisure. Thus a fall in income per hour at the margin will reduce the cost of additional leisure and will tend to increase the demand for it to an extent which will depend upon the individual's elasticity of demand for it.

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[1] See L. Robbins, "On the Elasticity of Demand for Income in Terms of Effort" (ECONOMICA, June, 1930), and D. Black. *The Incidence of Income Taxes*. ch. xii.

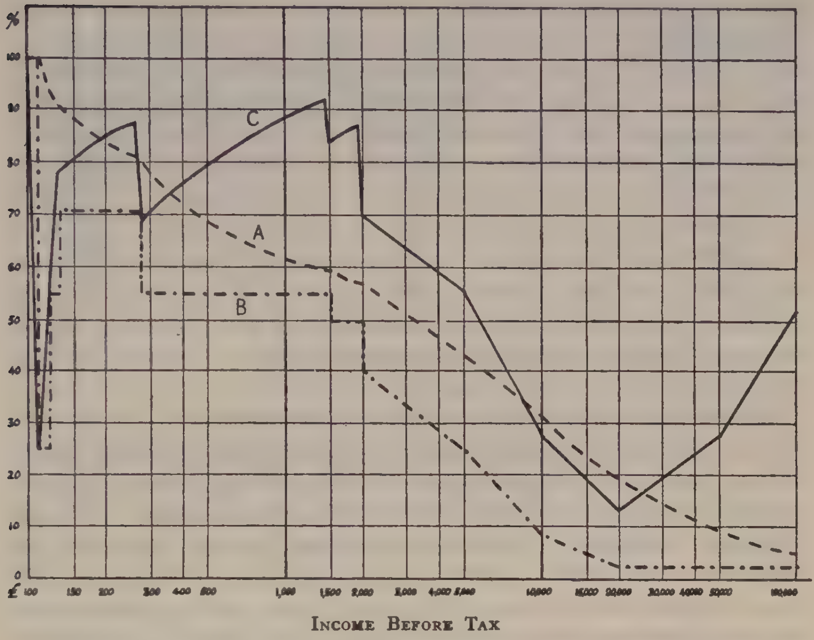
We thus have two effects pulling in opposite directions. The income effect of a rise in a flat rate of income tax will be to cause a decreased demand for leisure, while the price effect at the margin will be to cause an increased demand for it. Which effect will prove the stronger in any particular case can be determined only if we know the demand schedule for leisure at every level of income, though it seems likely that in the majority of cases the income effect will prove more important than the price effect, and that the demand for leisure will increase as income rises. It may be noted that this difficulty is not peculiar to the case of leisure. It occurs for every commodity of which a part is consumed by the producer. The direction of the change in the consumption of butter by butter producers as a consequence of a change in the price of butter is equally difficult to predict.

From the foregoing analysis it is clear that we should expect a fall in aggregate income, without a fall in marginal income, to be followed by a decreased demand for leisure and an increased willingness to work for pay, while conversely a fall in marginal income, without a fall in aggregate income, would tend to induce an increased demand for leisure and a decreased willingness to work for pay. We can probably go further, and say that the larger the decrease in aggregate relatively to marginal income, the more likely it is to reduce the demand for leisure, while the larger the decrease in marginal income relatively to aggregate the more likely it is that the demand for leisure will be increased.

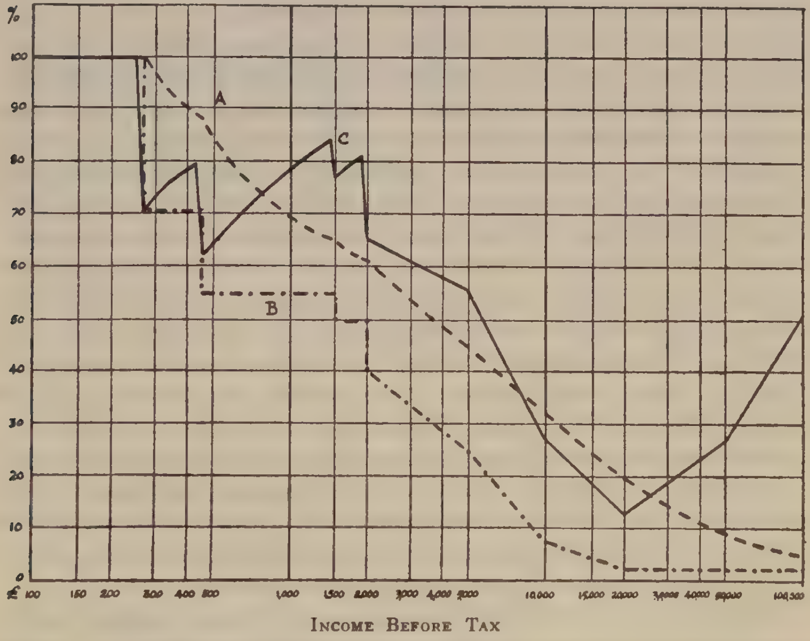
The relationship of the changes in aggregate income to changes in marginal income can conveniently be shown by first expressing the aggregate and marginal incomes remaining after tax as percentages of their pre-tax levels, and then dividing the resultant figure for marginal by the resultant figure for aggregate. The higher the figure thus obtained, the more likely it would be that the tax would decrease the demand for leisure and increase the willingness to undertake paid work. For example, the result of a

INCOME AND SURTAX (AT 1941 RATES)

(1) SINGLE MAN. ALL EARNED INCOME



(2) MARRIED MAN WITH TWO CHILDREN. ALL EARNED INCOME



CURVE A. = *Aggregate* income remaining after tax expressed as a percentage of *aggregate* income before tax.

CURVE B. = *Marginal* income remaining after tax expressed as a percentage of *marginal* income before tax.

CURVE C. = Curve B expressed as a percentage of Curve A.

£10 poll tax on different levels of income would be as follows :—

Original aggregate income.	Tax as % of original aggregate income.	Remaining aggregate income as % of original aggregate income.	Remaining marginal income as % of original marginal income.	Remaining marginal income as % of remaining aggregate income.
£100	10	90	100	111
200	5	95	100	105
500	2	98	100	102
1,000	1	99	100	101

This table illustrates the well-known fact that a poll tax is more likely to induce increased offers of work from a poor population than from the well-to-do.

The results of applying similar calculations to the present rates of income tax and surtax on earned incomes are shown in the accompanying charts. Chart 1 refers to a single man, and Chart 2 to a married man with two children. For the purpose of these charts, the marginal rate of tax has been defined as the rate payable on a small addition to income. No account has been taken of the promise to repay after the war the 1941 reductions in allowances. It is difficult to estimate the present value placed by taxpayers on this future repayment, but it seems likely that it is small.

As is inevitable with all systems of progressive taxation, the marginal rate of taxation is higher than the average rate for all taxed incomes. In the charts, therefore, the ratio of marginal to aggregate net income, or the " index of incentive " (curve *C*), lies consistently below 100, showing that our existing system of taxation is more likely to reduce incentive than a flat rate tax or a general rise in the price level. It will also be noticed that the index for the family man earning £450 a year or more is consistently lower than that of the single man. This is due to the fact that the marginal rates of tax above this point are the same for both, while the aggregate tax paid by the family man is lower throughout. It must not, of course, be deduced from this that the family man's incentive to work is diminished more than the single man's, for it seems probable that the effect of the former's responsibilities on the shape of his income demand schedule for leisure will more than offset the effects of his higher aggregate income.

The charts show that the index fluctuates considerably and irregularly with changes in the level of income. It has three distinct low points: (1) Where tax first becomes payable (£110 for the single man, £267 for the family man); (2) where the full rate of tax first becomes payable (£272 for the single man, £450 for the family man); and (3) where total marginal tax becomes stabilised at 97½ per cent. (£20,000). Only at the first of these points can it be said with certainty that incentive to undertake additional paid work will be diminished, for at that point aggregate income is still unchanged, while marginal income is diminished, in the case of the single man very sharply indeed. At other points all that can be said with certainty is that the probability of a decrease in incentive is greater the lower the index.

The high points of the curve, where the diminution in incentive will tend to be least, lie (1) shortly before the taxpayer becomes liable for tax at the full rate; and (2) shortly before earned income allowance ceases at £1,500. The whole curve from about £500 for the single and £800 for the family man to nearly £2,000, where surtax begins, stands high. From £2,000 to £20,000 it falls sharply, and though with the stabilisation of the marginal rate of tax at £20,000 it begins to recover, it does not again rise to its earlier levels until the income becomes truly astronomical. It is doubtful whether the effects on the incentive to work of taxpayers earning over £2,000 a year are very important, though the repercussions in the field of risk-bearing of a system of taxation which makes sixpennyworth of capital appreciation the equivalent of a pound's worth of dividends are likely to have considerable significance. This question is, however, outside the scope of the present enquiry.

The points at which the deterrent effects seem likely to be most appreciable are at £110 a year for the single and £450 for the family man. For the former especially the deterrent effect is likely to be serious, for while he pays no tax at present he is asked to pay no less than 75 per cent. of the next £10 he earns—a marginal rate of tax which is not again encountered until income reaches £5,000.

For most people the deterrent effect of high marginal taxation is probably substantially reduced by the present British system of assessment, whereby the income earned during the year ending April 5th is the amount upon which tax is paid during the year commencing the following

October.[1] Thus an increase in earned income does not normally begin to be reflected in increased tax payments until after the lapse of from six to eighteen months, and continues to affect them until from eighteen to thirty months after it is earned. This average time-lag of eighteen months between increased earnings and increased tax-payments probably prevents many taxpayers from realising clearly how much of their marginal earnings goes in taxation. The increased tax, when it comes to be paid, is probably often felt as an aggregate rather than a marginal tax, and may even tend in some cases to increase the incentive to earn, regardless of the fact that larger earnings now will mean still heavier taxation later on.

On the other hand, the fact that, for administrative reasons, direct services rendered by the taxpayer to himself or his family, and in many cases the goods produced by the taxpayer for his own or his family's consumption, are exempt from taxation tends to exaggerate the effect of high taxes at the margin on his willingness to undertake additional paid work. Although the value of the goods or services so produced may be lower than the gross additional income which could have been earned, it may be higher than the net addition to income after providing for tax. There must, for instance, be a certain number of middle-class married women who are induced by the high level of marginal taxation to stay at home and do their own housework, instead of going out to work and employing a domestic at a lower salary than they could earn themselves. Thus there is a social loss of the difference between the values of the services of the housewife and the domestic respectively in non-domestic employment. Similarly, high marginal taxation may cause work on a garden or allotment to be preferred to an increased amount of more valuable paid work.

The deterrent effect of high taxation at the margin is also likely to be increased when it is accompanied by an increase in wage rates greater than the increase in the cost of living. Since the percentage fall in marginal incomes due to the tax will be greater than the percentage fall in aggregate incomes, it follows that an increase in wage rates which leaves the taxpayer better off in the aggregate may still yield him a lower net wage at the margin. This is the case where, given any elasticity at all in either the demand or the income demand schedule, there must be some increase in the demand for leisure; for, with a higher aggregate income and a lower marginal income, both price and income effects are pulling in the same direction.

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[1] Surtax becomes payable only in the January of the next year but one, and for this tax the average time-lag is therefore twenty-seven months.

Where the rise in the cost of living exceeds the rise in wage rates, it cannot be stated with certainty whether the demand for leisure will be increased or decreased. Both aggregate real income and the real price of leisure are reduced, and the result will depend on the shapes of the two schedules. In most cases, however, one would expect that a rise in the cost of living would tend to offset the deterrent effects of increased taxation at the margin. Where there is a rise in wage rates exactly equal to the rise in the cost of living, the only result is to shift the taxpayer into a higher income group, and the effect on incentive will depend on the relationships between aggregate and marginal taxation in his new and old groups.

The effects of high taxation at the margin would have been seen in a most extreme form if the proposal for a 100 per cent. Excess Income Tax had been adopted, on the analogy of the Excess Profits Tax. This proposal does not seem to have received serious consideration; but there is a possibility that somewhat similar results may follow from a wide extension of the system of rationing. Even with the present partial rationing system, marginal earnings have lost a considerable part of their purchasing power. In addition, the fixation of maximum prices, even without rationing, has a very similar effect in demonetising marginal earnings. As soon as prices are fixed at a level below that at which the whole of the demand can be met, supplies are distributed, not according to the amount people are willing to spend on them, but either by some unofficial rationing system, or according to the time buyers have free to stand in queues, or by superior local knowledge, or by sheer luck. As the area covered by price-fixing and rationing extends, the demonetisation of marginal earnings becomes increasingly effective for all incomes above the level sufficient for buying the official and unofficial rations, a level which itself is kept down by the subsidisation of prices of necessaries. Should the exigencies of war finance necessitate the imposition of a system of universal rationing, whether global or by individual commodities, the effect would be in many ways similar to the imposition of 100 per cent. compulsory saving for all earnings in excess of the amount necessary for buying the full ration for the taxpayer and his family.

Such a system would differ from an excess income tax, or a scheme of compulsory loans to the government, only in that the taxpayer would be able to invest his savings as he liked or to give them away to those who otherwise could not have afforded to buy the full ration. It would help to extend the effects of " cheap money " not only to government securities but to other types of investment, including such direct investment in durable goods as other wartime restrictions allowed. It would also favour debtors as compared with creditors, for the debtor would be enabled to pay off his debt with money which neither he nor his creditor could spend. The debtor, at least for the duration of the war, would be no worse off than if he had never contracted the debt, and after the war would find himself released from his indebtedness. " Cheap money " plus strict rationing thus has an effect on the relationship of debtors and creditors very similar to that of a normal inflation.

For some people, then—for those with monetary obligations, or who have particular investments which they are anxious and permitted to make, or who cannot afford the whole permitted ration for themselves and those dependent on them—even the completest system of rationing will leave some present incentive at the margin. But for the rest the effect on incentive will depend on the rate at which they discount the post-war benefits which they will derive from present involuntary saving. It seems likely that for many people this rate of discount will be high, and that the incentive provided by earnings which cannot now be spent will not be very great.

On the whole, therefore, it seems reasonable to expect some, and perhaps a considerable, loss of economic incentive to undertake additional work for pay, as a result of high marginal rates of taxation, price fixing, and rationing. Against this there can fortunately be set the great increase which occurs in wartime in the willingness to work harder in the interest of the community as a whole. It would, however, be both unfair and unwise to rely wholly on patriotism to offset the diminution of economic incentive—unfair because it would throw the whole burden upon the more public-spirited members of the community, and unwise because even the most public-spirited are likely to find it easier to maintain a high level of output if their services receive some immediate and tangible recognition.

The necessity for offsetting the effects of taxation and rationing in reducing the cost of leisure and for increasing incentive at the margin has already led to the introduction of various measures designed to raise marginal income relatively to average income. One method is to fix a longer standard working week and then to pay a bonus for satisfactory attendance. This is very similar in its effects to an increase in overtime rates without a corresponding increase in standard rates. Let us assume that the worker receives the bonus only if he works six days a week. If he works five days at £1 per day he earns £5; if he works six days he earns £6 plus a bonus of 1s. per day for the whole week. His rate of pay for the sixth or marginal day is thus £1 6s., or 30 per cent. more than the intra-marginal rate and 24 per cent. more than the average rate for the week.

An alternative is applied in those industries which have been made subject to an Essential Work Order. Under these orders absenteeism is made a punishable offence. This has the effect both of raising marginal and of lowering intra-marginal wages. If, for instance, a man earning £1 per day, who should have worked six days, works only five and is fined £2 for his absence, his net income for the five days is only £3, or 12s. per day. The income foregone by not working the sixth day is £3. His marginal rate of earning thus becomes five times as great as his intra-marginal rate and three times as great as his average rate.

Neither of these methods of providing additional incentive seems to be wholly satisfactory. The former, to be effective, would probably have to raise marginal costs out of all proportion to the increase in output, while the latter can presumably be invoked only in the most flagrant cases. Further, neither of them meets the difficulty of loss of incentive due to the partial demonetisation of marginal earnings by rationing, except in so far as the fines imposed under the second method reduce the remaining income below the level necessary for purchasing the full ration.

In view of this, it is perhaps worth while to consider whether it might not be possible to modify existing methods of taxation and rationing with a view to removing or reducing their undesirable effects on incentive at the margin. For instance, income tax might be levied, not upon the income actually earned, but upon the income which would have been earned had the taxpayer worked a standard number of hours. In this case, the number of hours actually worked would not affect the amount of tax paid. Should the taxpayer choose to enjoy more leisure than envisaged under the standard fixed, he would be taxed upon it as if he had been earning[1]; while if he chose to work more than the standard number of hours, he would reap the whole benefit of his extra labours. In this way, the marginal cost of leisure would be restored to equality with the amount of his gross marginal earnings, and the incentive to work would suffer no diminution.

Again, the loss of incentive due to rationing might be greatly reduced if those working overtime (i.e. more than the standard number of hours per week) were rewarded for their extra labours, not with higher rates of pay, but with increased facilities for spending their extra earnings. If, for instance, those working overtime were presented with extra coupons, permitting them to spend some part of their overtime pay on additional scarce or rationed goods, either at ordinary shops or at special stores provided for the purpose, there can be little doubt that a very marked increase in incentive would result. The increase in the consumption of scarce goods would be relatively small and would probably be far more than offset by the additional output obtained, while the rest of the community could hardly complain at a system whereby such small margin of scarce goods as was available went to those who were doing an abnormal amount of work.

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[1] Allowance would of course have to be made for involuntary absences from work, due to illness or other unavoidable causes.

The Two-Part Tariff

By W. Arthur Lewis

Two-part charging has made steady progress in this country since it was first suggested in the later years of the nineteenth century. In the electricity industry, where it was first adopted, the system is now almost universal; it has been adopted by the Central Electricity Board, which controls wholesale distribution, and strongly recommended to retail distributors by two committees reporting to the Electricity Commissioners. In 1921 it was applied to the telephone system, where it is now the principal method of pricing. Gas legislation has been specially altered to permit undertakings to use the system, and they were adopting it with some zeal in the years immediately preceding the outbreak of war. In industry at least one concern has been using the system for some forty years. Yet despite this progress the principles of two-part charging are not widely known or understood. Much of the literature is obscure, some aspects of the subject have never been fully treated, and even where there is agreement among the better writers, their conclusions have not yet seeped through to all the persons responsible for drawing up these tariffs. A further survey of the subject does not therefore seem inappropriate.

The essence of two-part charging is that the consumer is called on to pay two charges, one which varies directly with the amount of the commodity that he consumes, and another which does not. Thus the Post Office charges for the use of the telephone (1) a quarterly rental, payable whether any calls are made or not, plus (2) a charge for each call. Similarly for electricity one may be asked to pay a fixed charge depending on e.g. the size or rateable value of one's house, plus a charge per unit of actual consumption. Let us first examine the incentives to two-part charging, and then enquire how it serves the public interest.

I

The first incentive to the use of a two-part tariff is the existence of standing charges which continue whether a firm is operating or not. First, where in consequence of periodical fluctuations in demand, there are regular periods when equipment is standing idle, it is often suggested that the only "scientific" way to allocate costs to consumers is to use a two-part tariff. And secondly, even where there are no such regular fluctuations, an entrepreneur may find it profitable to use a two-part tariff in order to escape the risks of unforeseen change. Let us take first the regular fluctuations.

Most industries are subject to some degree of regular fluctuation in the demand for their products: at some times business is brisk, at others it is slack. The cycle may be diurnal—restaurants, buses and shops have regularly each day hours of peak demand and hours of almost idleness—or it may be weekly, or seasonal, or like the trade cycle it may extend over several years. Where the product can easily be stored, these fluctuations in demand need not induce similar fluctuations in production; the plant can work continuously throughout the year, storing in the slack period the excess output which will be required at the peak. If the product cannot be stored, or the cost of storing it is prohibitive, the result is different; the plant must be large enough to meet the maximum demand, and when demand slackens, equipment lies idle. It is then necessary, in computing marginal cost, to distinguish between supplies produced at the peak, and those produced at other times. If the plant is of equilibrium size, it is necessary, in order to produce additional supplies at the peak, to provide additional equipment; marginal cost at the peak is high, and may be nearly equal to, or even greater than, average cost. But in the slack period no additional equipment is necessary, and marginal cost is correspondingly less.[1] If the cost of storing the commodity were less than the difference between these two different marginal costs, it would pay to store, and production would be continuous; cost of storage is prohibitive when it exceeds this difference.

The conclusion that the whole of the standing charges is to be allocated to peak output may seem at first to conflict with the doctrine that such charges are a joint cost of peak and slack periods which cannot accurately be divided between them. But this is not so. Let us take the analogous case of growing cotton to produce seed and lint. If there is a good demand for both these commodities it is impossible to allocate the cost between them: demand alone will decide what part is to be contributed by each. But suppose that there is a very strong demand for lint and only a very small demand for seed, such that in the equilibrium situation more seed is produced than the market will take at any price above zero; then the whole cost will be contributed by, and is attributable to the production of lint. Similarly with production in peak and slack periods. If a mere lowering of price in slack periods stimulates demand sufficiently to keep equipment fully occupied at a price greater than zero, no exact allocation of costs is possible as between peak and slack. But when some equipment must lie idle in the slack period, the whole cost becomes attributable to peak output.[1]

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[1] Undertakings frequently rely on their slack periods for overhauling equipment, making new plans, or just resting. Compensation for this must be included in computing marginal cost in slack periods. In the limiting case, where all the slack time and equipment are taken up in this way, marginal cost is the same as at the peak.

The suggestion that under these conditions the appropriate method of charging is to use a two-part tariff we owe to an English engineer, Dr. John Hopkinson, who became consulting engineer to the first Edison electric power stations in this country, and subsequently Professor of Electrical Engineering at King's College, London. For his presidential address to the Junior Engineering Society in 1892 he chose as subject "The Cost of Electric Supply".[2] The paper begins by stressing the fact that costs are determined by peak demand, goes on to analyse the various elements of fixed and variable cost, and concludes:

> "The ideal method of charge then is a fixed charge per quarter proportioned to the greatest rate of supply the consumer will ever take, and a charge by meter for the actual consumption."[3]

According to this principle it is necessary to discover for each consumer not only how much he consumes during the quarter, but also what is his maximum rate of consumption, defined as the largest amount taken in any small period, e.g. half an hour. Since the equipment of the concern depends on its maximum output in a short period, the consumer is made to pay a fixed charge depending on his maximum in a short period. A similar idea underlies the "Wright" rates offered by some concerns—a type of quantity discount whose gradations depend upon the maximum rate of consumption of the individual consumer.

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[1] The standing charges to which we are referring in this section are not overheads in the sense of costs which do not vary with output. They are costs which increase if peak output increases, and which in the long run can be reduced if peak output is reduced; i.e., they are part of long run marginal cost. True overheads, which do not vary with peak output, are joint costs which cannot be allocated. But such costs are rare.

[2] First published in the *Transactions* of the Society, Vol. III. Reprinted with other papers by Hopkinson in his *Original Papers*, Vol. I.

[3] *Original Papers*, p. 261.

This conclusion was hailed as a great discovery, and made the basis of many tariffs. Unfortunately it was based on a simple confusion. It is true that it costs a station more to supply 1,000 units if they are all to be taken in one minute than if they are to be spread over a longer period; but this applies to the aggregate output of the station, and not to supplies to the individual consumer. What is true of the individual consumer is that the cost of selling to him is greater if he buys during peak periods than if he buys during slack periods (unless there is excess capacity even at the peak). If therefore he takes 24 units all in one minute during the slack period it may cost less to supply him than if he takes 24 units at the rate of one unit per hour, because in the latter case he adds to capital costs at the peak. The maximum rate at which the individual consumer takes is irrelevant; what matters is how much he is taking at the time of the station's peak.

This point is now generally accepted among the better writers on the subject, but the persons actually engaged in framing tariffs (they are usually engineers) do not seem to have mastered it yet. A recent survey of the tariffs of the larger electricity undertakings show 34 per cent. offering to industrial consumers two-part tariffs based on individual maximum demand, and a smaller percentage offering such tariffs to domestic consumers.[1] They have also been recommended by a committee reporting to the Electricity Commissioners,[2] and adopted by the Central Electricity Board. Gas engineers, indeed, have gone so far as to suggest for their product two fixed charges based on individual maximum demand, one to take account of the production peak, and one for the distribution peak. Since gas can be stored, the two peaks do not coincide. The volume of output produced varies not from hour to hour, but from season to season, the size of the plant being determined by the greatest demand in any twenty-four hours. But the calls on the distribution system vary from hour to hour. Two fixed charges to cover the standing costs of production and distribution, a third to cover " customer " costs (discussed in Section IV of this paper), and a variable to cover prime costs, would give the industry a four-part tariff—such are the heights to which this sort of analysis leads !

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[1] D. J. Bolton, *Costs and Tariffs in Electricity Supply* (1938), pp. 117 and 136.

[2] *Report on Uniformity of Electricity Charges and Tariffs* by a Committee appointed by the Electricity Commissioners (1930), paras. 119, 136.

Hopkinson himself seems to have been a little uneasy about all this, for he added :

> " In fixing the rates of fixed charge it must not be forgotten that it is improbable that all consumers will demand the maximum supply at the same moment, and consequently the fixed charge named might be reduced or some profit be obtained from it."[1]

This however merely added to the confusion. For subsequent writers professed to meet the difficulty by introducing the concept of the " diversity factor ". Since all consumers are not taking at their maximum rates at the same time, the sum of the individual maximum demands is greater than the total demand on the station at the time of its peak. The diversity factor is defined as the ratio of the sum of the individual demands to the total demand at the time of the peak. There are many theories as to the way in which this diversity factor should be used to " correct " cost allocations based on individual maximum demand ; the subject has a vast literature. The latest English work on the subject, D. J. Bolton's *Costs and Tariffs in Electricity Supply* (1938), contains a thirty-page chapter on the diversity factor, full of mathematical symbols, curves and principles deduced from the laws of probability, though from the tentativeness with which he puts them forward, the author himself does not seem to have much faith in them. This is as well, for no amount of correction can alter the fact that the standing costs of the undertaking are related not to the maximum rate at which the individual consumer takes, but to the amount he takes at the time of the station peak. Both the Hopkinson two-part tariff and the Wright quantity discount, based on the maximum demand of the individual consumer, are fallacious in so far as they claim to be exactly allocating to each consumer the costs he causes the undertaking to incur.

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[1] *Original Papers*, p. 261.

As we have already seen, the true essence of the problem is that marginal costs are greater at the peak than at other times. To put the matter loosely, capital costs are to be allocated exclusively to consumers taking at the peak, and in proportion to the amount each takes at that time. It is not uncommon to find cases where prices are for this reason higher at the peak than in slack times. Thus transport undertakings frequently offer cheap tickets in the middle of the day, the telephone system has its cheap night rates, and there are seasonal fluctuations in shipping freights and in hotel charges . Such price differentiation is not price discrimination, or charging what the traffic will bear, for those terms in their proper meaning relate to differentiation based on differences in elasticity of demand, while the differentiation here is due to differences in marginal cost, and is just as likely, if not more so, in perfectly competitive conditions as in cases of monopoly.

Nevertheless, while we may say that the " normal " way to allocate standing charges where there are peaks is simply to charge different prices at the peak and in slack periods, it is theoretically possible to achieve the same result with a two-part tariff. If the fixed charge is based not on individual maximum demand but on individual consumption at the time of the station peak, the total charge to any consumer will be the same as it would be if he were charged different prices at different times for a consumption with the same time pattern. This method of allocating standing charges need not be confined to electricity. The season tickets offered by transport undertakings are of the same kind ; the holder is expected to travel to and from work at the peak, and makes his contribution to expenses in a lump sum ; he is then allowed to travel free at all other times, since the cost of carrying the marginal traveller at other times is negligible. Even the long fluctuations associated with the business cycle could be dealt with in this way, the consumer paying at the beginning of say every ten years a fixed sum based on his consumption during the boom. In the case of electricity the indices at present used by various undertakings on which to base their fixed charges—rateable value of the consumer's house, size of the house, capacity of apparatus installed (even individual maximum demand)—may be more or less fair bases for estimating the proportions in which different consumers take at the time of the peak; but they cannot claim to be allocating the standing charges as exactly as would a charge varying directly with consumption at the time of the peak.[1]

Yet the two-part tariff may be the best method available. Charging different prices at different times is only possible if the time of consumption can be recorded. In the early days of electricity such differentiation seems to have been out of the question because of the cost involved in installing special meters to time the consumption of the individual consumer and charge him accordingly. In these circumstances some early concerns were content to make a charge which did not vary with the hour, and which was clearly inappropriate not only because it allocated part of the standing charges to units consumed in slack periods, but also because the result of so doing was to discourage consumption in the period when marginal costs are low. Where there are regular fluctuations in marginal cost, and the timing of consumption is impracticable, two-part charging is superior to making only an undifferentiated variable charge, because off-peak consumption does not make any contribution to the fixed charge and is stimulated by the low variable. It is true that when the two-part tariff is first introduced, the low variable will also tend to stimulate peak consumption, but if there is a general increase in peak consumption, the fixed charge will be increased to meet the heavier standing charges, and will allocate them more or less correctly according as the index chosen truly reflects the proportions in which different consumers take at the time of the peak.

We must therefore conclude that as a method of cost allocation where there are peaks in demand and supply, the two-part tariff is superior to having a single undifferentiated price which discourages off-peak consumption, but inferior to charging different prices at different times, though it may sometimes be more convenient than the latter if the measurement and timing of consumption are costly. This may have been the case when electricity was first being developed, but does not seem to be so any longer. According to Bolton:

> "If one were starting *de novo* it would be an easy matter to invent a much more scientific tariff on the costs side,

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[1] In addition each of these bases has its own disadvantage. E.g., rateable value is a much more arbitrary index of consumption than is even the size of the house; and charging according to capacity installed tends to discourage installations. For a discussion of this see *Report on Uniformity of Electricity Charges*, paras. 70–99.

> and moreover a perfectly practical one.[1] Undertakings usually know when their peaks will occur, both locally and on the bulk supply. Tariffs would be framed to avoid these times, and for domestic loads they might be, say, 4d. a unit from 4 to 6 p.m. and ½d. all other times. A combined single-phase meter and synchronous clock could be mass produced for about 30s. to 35s., and for another 5s. the makers could probably extend the hands and put it in a bakelite case. It could then hang in the hall and show the time of day (and, incidentally, the rate of charge). An alternative method of changing the timing could be by ' ripple control ', referred to at the end of Chapter VII.
>
> " Such a tariff would require no alternatives and would save all individual assessments and charges whatsoever. It is perfectly easy to understand, particularly after all the publicity recently given to the ' shilling trunk calls ' based on exactly the same principle. It represents real costs and at the same time it gives endless scope for heating, cooking, etc., at competitive figures for all times outside the narrow high price zone. However, such ideals (if ideal they are) must be reserved for some brave new world, since the timid old one has chosen other methods and is too fearful of change to be likely to give them up."[2]

II

To conclude that two-part charging, using any of the usual bases for calculating the fixed charge, is an inferior method of cost allocation, is not, however, to conclude that it is either an undesirable or an unprofitable method of recovering the standard charges. It may be a method by which a firm protects itself against the risks of unforeseen change.

Let us suppose that an entrepreneur is deciding to invest capital in the form of durable equipment in a certain industry. In doing this he runs the risk that his expectations of the future may be frustrated; if there are new products, new rivals, new inventions, or other unfavourable changes, he may be unable fully to recover the money he is investing.

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[1] The author adds the cryptic footnote : " I.e. it would work, and in fact has worked. But this is not to say that it would be more satisfactory, in practice, than our present schemes. Experience in Paris suggests that it might not, and anyhow it is far too large a question to be discussed in a sentence."

[2] *Op. cit.*, pp. 208–9.

How is he to protect himself against the risk of such changes? From his point of view, the most satisfactory arrangement might be to avoid all risk by getting each potential consumer to pay in advance some proportion of the sum invested. If in the aggregate consumers contributed sums sufficient to cover the capital invested, the entrepreneur would be relieved of all risk of loss. Nevertheless, much as this arrangement might please the entrepreneur, it would be unlikely to please the consumer, who is reluctant to pay in advance for services which he may never use. If this method proved impracticable, the entrepreneur might try as his next best course to get each user to contract to take a minimum quantity of the product, or if payment is by monthly subscription, to subscribe for a minimum number of months—this is a common feature of telephone, gas, electricity and other undertakings. Failing this, the entrepreneur may try to protect himself by securing exclusive contracts, the customer promising not to use the services of any rival undertaking. The list of concerns using such contracts is large; it includes the railway companies, who offer special " agreed charges " to clients who send all their traffic by rail, liner conferences who offer a " deferred rebate ", brewers, film distributors, iron and steel concerns, a manufacturer of shoe machinery, and others. Or he may simply offer quantity discounts. All these are methods of tying the consumer to the undertaking, relieving the entrepreneur of the risk of loss due to miscalculations or to changes in demand or supply conditions.

Such devices run counter to the spirit of private enterprise. The essence of that system is that entrepreneurs are the specialists in risk-bearing. It is therefore very difficult to introduce such devices into an industry where entry is unrestricted and easy. There is usually some entrepreneur who is willing to charge the consumer per unit consumed, and to assume himself the risk that over a number of years demand will be large enough for him to recoup all his costs[1]; and where there are such entrepreneurs, consumers are unwilling to be tied by payment in advance or by any exclusive contract. Competitive private enterprise demands that overhead costs shall be recouped not through any fixed charge, as the theory of the two-part tariff suggests, but by inclusion in the variable charge.[1]

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[1] Sometimes it is suggested that in very risky industries no entrepreneur will come forward unless protected either by a monopoly or by special contracts. For instance, the patent system receives some support on the ground that entrepreneurs would be unwilling to try out new inventions unless protected by a monopoly. Similarly combinations in liner shipping are said to be necessary since shipowners would be unwilling to send their ships on regular voyages unless protected against intermittent competition. There seems to be little ground for this view. In the liner case the combinations emerged because there were too many regular sailings, not because there were too few, and their effect was to reduce, not to increase the number. But this is too large an issue to be developed here.

The monopolist, too, may meet his overhead costs simply by having a sufficiently high variable charge. But he may choose between doing so and making a fixed charge. He may have a fixed and no variable charge, or a variable and no fixed charge, or some combination of both. The risk of unforeseen change is a strong argument in favour of a fixed charge, which will throw upon the consumer any loss resulting from unfavourable change. Hence unless the entrepreneur is willing himself to bear this risk—and with it the possibility that there may be *favourable* changes—he may seek to impose such a charge. His incentive to insure himself in this way will be particularly great if his product has to face strong competition from other products. For the imposition of a fixed charge in a sense ties the customer to the undertaking, making it worth his while to buy as much as possible from that concern, rather than to divide his purchases, so that his average price may fall as low as possible.

However, the power of the entrepreneur to secure himself in this way depends on the attitude of consumers and on the strength of his monopoly position. It may well be that if a fixed payment is demanded some consumers who are not certain how large their consumption will be will refrain from buying at all. Thus a recent survey of gas undertakings in Great Britain which offer consumers the alternatives of a two-part tariff and a single variable charge shows that a large percentage of those who would benefit by switching over to the two-part tariff fail to do so. Ignorance of the advantages of the two-part tariff may account for this to some extent, but it is also probable that some consumers prefer to remain on the ordinary tariff because they are uncertain how large their consumption is likely to be, and unwilling to commit themselves to the payment of a fixed charge.[1] Where this is an important element, there must be no fixed charge or only a low one, or alternatively consumers must be permitted to choose between a two-part tariff and an ordinary one. Note however that in some cases the element of risk may work the other way. A potential customer may say, " I am unwilling to take this commodity on the basis of so much per unit because I am uncertain how much my family and I will take from time to time, and I may find at the end of the year that we have run up a tremendous bill ; I would prefer you to quote me one lump sum charge, and then let us take as much as we like." If the commodity is a new one, or subject to large and unpredictable variations in demand (e.g. one's demand for medical services) the risk element may well favour the imposition of a high fixed charge with a very low or no variable.

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[1] Sometimes part of the "overheads" can be traced to some particular consumer. For instance, a firm may generate its own electricity, but may also connect itself to the public service as an insurance against breakdowns. Where the public station has to instal extra plant as a reserve against this contingency it will make a fixed charge to the firm whether it takes any electricity or not. But in these cases the "overhead" is not an overhead at all; it is a cost directly attributable to the particular consumer, and would not be incurred but for the undertaking to serve him; it is a "customer" cost, as defined in section IV of this paper.

In sum, we can see that there is much more in the analysis of standing charges than meets the eye. To the economist, brought up on the analysis of competitive markets, what to do about such costs presents little problem ; they go into a variable charge, fluctuating with demand. To the public utility engineer, impressed by the fact that these are fixed costs not diminishing with output, the ideal charge is a fixed charge. Either of these may be the more profitable solution in any given case, but each case must be considered on its own merits.

III

So much for standing charges and their relevance to two-part charging. In the literature of the subject this is the topic most often mentioned, but there are other incentives to two-part charging which we must now examine.

The first point to be considered is that it may not be worth while making a variable charge if the cost of measuring the amount taken by each consumer is high. In the early days of electricity and of the telephone, before simple recording devices were invented, consumers were for this reason charged a lump sum independent of use. Similarly in some countries it is considered that the cost of installing water meters in each house, and reading them periodically, would not be justified. This argument is most forceful where elasticity of demand is not very high, so that consumption is not much greater if unmeasured than it would be if it were measured and charged for. If elasticity of demand is high, and marginal cost high, the argument loses its force.

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[1] See P. Chantler, *The British Gas Industry*, pp. 127–130.

Another point in favour of having a fixed charge is that it may make it possible for the firm to extract some of the "consumer's surplus". The extent to which this is possible depends on the income elasticity of demand for the commodity. If income elasticity is zero, then when a fixed charge is imposed, so long as it is not so high that the consumer ceases to buy altogether, he will buy the same amount at any given marginal price as he would have bought if there were no fixed charge; he will therefore be paying a higher average price for any given quantity than he would be prepared to pay if there were only a variable charge. The effect of the two-part tariff is as it were to shift his demand curve to the right.[1] But this is only so where income elasticity of demand is low. What it boils down to in practice is that the firm will gain from the two-part tariff if customers keep their eyes on the cost of the marginal unit rather than on the total amount spent on the commodity. If the customer watches the size of his bill rather than the marginal price the demand curve facing the firm will be substantially the same whatever system of charging it may use. This point is not always understood. Thus it is sometimes suggested that the success of the two-part tariff is proved by the fact that sales expand when a firm adopts it.[2] But this view is fallacious. If the fixed charge is small, the effect of adopting a two-part tariff is to lower the average price at which the commodity is sold. But if the firm lowered its average price without adopting a two-part tariff sales would similarly expand. The only relevant question is, if the average price had been lowered to the same extent without adopting a two-part tariff, would sales have expanded to the same or a lesser extent? For the two-part tariff is superior only in so far as it enables the firm to sell more at any given average price than it would if average and marginal prices coincided. In some cases this will be so, in others where the customer concentrates on the size of his bill rather than on the marginal price the two-part tariff has not this advantage.

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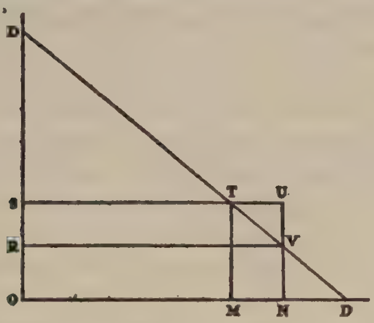
[1] The two-part tariff shares this characteristic with quantity discounts of the "block" type. Wherever the average charge differs from the marginal charge, the demand curve tends to be shifted to the right.

[2] E.g. J. T. Haynes, giving the results of a two-part tariff at Rotherham, makes this claim. *The Two-Part Tariff as an Aid to Gas Sales*, pp. 23–35.

The fact that two different elasticities are relevant when the two-part tariff is used, income elasticity and elasticity of substitution at the margin, is important where two products are highly competitive with each other, as in the case of gas and electricity. The point is not important if one product is a substitute for the other in all uses, for then even if one industry is offering a two-part tariff with a very low variable charge, the consumer will carefully compare his probable total expenditures in using the one product or the other before he commits himself to the payment of the fixed charge. Here competition is determined not just by the marginal price, but also by the amount of the fixed charge; it is average price that counts.[1] But the position is different if each product has a use in which it is essential, and competition is limited to certain additional uses, e.g. if electricity is considered essential for lighting, and gas for cooking, but they compete for heating and other purposes. Here since the fixed charge has to be paid anyway, only the marginal price is relevant. Each industry may find it profitable so to reduce its variable charge that it only just covers marginal cost. It is easily shown that it will not pay to go below marginal cost. Thus in the following diagram, if DD is the demand curve, OS the marginal cost, and income elasticity is assumed zero, the maximum consumer's surplus which can be extracted from this particular consumer by way of fixed charge is the area DST. If the



[1] If after making the comparison the consumer chooses the product using the two-part tariff, he will become tied to the firm, which will then profit if there should be unforeseen change unfavourable to him. But this is a separate point which we have already discussed in the preceding section of this paper.

firm made a variable charge less than *OS*, say *OR*, the consumer would demand *ON*, and the firm's net revenue would be a maximum of *DST* minus *TUV*, the fixed charge being increased to *DRV*. If the variable charge is to go below marginal cost, it must be for some reason other than consumer's surplus, such as the reasons already mentioned. Now marginal cost is not the same as prime cost; it includes all costs which vary with output. In the long run most costs, including equipment and expenses of management, vary with output, and this must be remembered in appropriate circumstances. In the limiting case all the firm's costs are marginal costs, to be recouped through the variable charge, and if it is subject to strong competition the firm will be unable to tap consumer's surplus by levying a fixed charge. In general a fixed charge can only be levied if the firm is in a strong monopoly position, or if marginal cost is less than average cost and firms take account of this in their oligopolistic competition with each other.

Next we come to two-part charging as a form of price discrimination. The effect of making the same fixed charge to all consumers is to discriminate against the small ones. This will pay only if their demands are on the average less elastic than those of large consumers. This is not usually the case, but may be found in special conditions. Thus the small consumer of electricity may be small because he is using it only for lighting, while the large may be using it for heating, power, or other purposes for which the demand is much more elastic than for lighting. One way of meeting this situation would be not to use a two-part tariff, but to charge different prices for current used for different purposes. The two-part tariff, however, serves the same purpose; it is an alternative to rate classification.

Nevertheless it is unlikely that the ability to bear a fixed charge will be the same among all consumers. To avoid discriminating heavily against small consumers, undertakings sometimes have a different fixed charge for each consumer, varying according to the rateable value of his house, the number of rooms, or some similar index. This has indeed the advantage that the fixed charge can be made to increase so rapidly that in effect larger consumers are made to pay higher average prices per unit than smaller consumers, if the smaller are thought to have the more elastic demands.

To avoid frightening off the smaller consumers it is also customary to offer as an alternative to the two-part tariff a single variable charge, somewhat higher than the variable charge of the two-part tariff; the latter is then used only by larger consumers. Or the firm may offer not a two-part tariff but a "block" quantity discount; e.g. it may say, "for the first 20 units, 6d. per unit, additional units at 1d. per unit". This is not so hard on the small consumer, while for the consumer of more than 20 units it has the same effect as a two-part tariff in that the average price differs from the marginal. Here too the size of the first block may vary from consumer to consumer.[1]

Finally, the whole of this discussion so far has been based on the tacit assumption that price discrimination is practicable. This is of course only the case if the commodity cannot easily be transferred from those who pay a low price to those who pay a high price. Suppose, for example, that a department store tried to recoup its overhead costs by using a two-part tariff: it might for instance offer a 10 per cent. discount to any customer who pays a "quarterly subscription" of £2. It would be unlikely to continue the scheme long, because it would soon find that some people were getting goods through subscribing members without themselves paying a subscription. Unless buyers can be isolated from each other, the two-part tariff is an unprofitable method of pricing.[2]

There is, however, one exception to this rule. If a firm is selling to middlemen, a two-part tariff will enable the large middleman to produce more cheaply than the small, if the fixed charge is the same to both, and perhaps to capture his business. The firm may prefer to have only a few large customers, for it may wish them to be able to form a combine to increase their own charges to the public, so that it in turn may be able to share part of their monopoly gains. Trade unionists sometimes for a similar reason urge their employers to combine. In such circumstances the firm will discriminate heavily against small customers, having a fixed charge which is very high relatively to the variable, or even dispensing entirely with the variable and allowing any customer who pays the fixed charge to take as many units as he likes. On the other hand, it is equally likely that the firm may fear that a reduction in the number of its customers might be harmful, since they may be able to combine to force down its charges. In this case it will pursue the opposite policy, discriminating not against the small middleman but against the large. Or again it may particularly want to discriminate against large purchases if the commodity is trade marked and perishable, and it wishes to maintain a reputation for freshness; or to discriminate against small purchases if it wishes to create a reputation of exclusiveness for its products (e.g. cosmetics). Any argument for reducing the number of one's retail outlets is an argument supporting the use of a two-part tariff; any argument in favour of increasing their number is an argument against having a fixed charge.

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[1] It has sometimes been suggested that when a firm first introduces the block quantity discount each consumer should have as his first block an amount equal to his previous consumption. But this is not an easy policy to put into effect. J. T. Haynes, who contemplated introducing it in one undertaking he controlled, explains why it was rejected: "It was then proposed that every consumer should be charged a greatly reduced price for all gas used in excess of his normal consumption. This sounded attractive, but examination revealed a number of difficulties. What was a consumer's normal consumption? A large number of typical meter cards were examined, and adjacent houses were found to have widely different consumptions, affected by the number in the family, periods of sickness, inclination or disinclination to use gas, etc. The application of the proposal in such cases would quickly create a sense of unequal treatment between neighbours, and could not be defended by the undertaking in the light of the equal conditions clauses in the Corporation's Gas Acts." See *The Two-Part Tariff as an Aid to Gas Sales*, p. 13. C. L. Paine's proposal (see his article "Some Economic Consequences of Discrimination by Public Utilities," ECONOMICA, 1937) would be even more difficult to apply than this, because it involves raising the upper price above the level of the previous price and estimating how much each consumer would have bought if this were the only price.

[2] The department store might meet this difficulty by putting a limit on the amount bought on any one subscription, say £30. But then "membership" ceases to correspond to the true two-part tariff, and becomes a means of charging a special price to those who purchase between £20 and £30.

IV

We have left to the last the case for two-part charging based on the existence of "customer" costs, because, though it seems the most obvious case, to analyse it is to get a summary of the whole problem. "Customer" costs are those costs which have to be incurred if any given customer is to be served, but which do not vary directly with his consumption; such costs as equipping his house with electric wires and fittings, installing a meter and reading it periodically, keeping his account and so on; costs which vary with the number of customers rather than with output.

Suppose, for example, that an electricity concern is supplying electric current, and undertakes to wire premises and instal all necessary fittings. The cost of the installation is an indivisible item which does not vary directly with the amount of current consumed. At first sight it seems quite reasonable to make a separate charge for this, or to use a two-part tariff, basing the fixed charge on the cost of installation, or at least to offer quantity discounts for current. But this is not necessarily the most profitable policy. In suitable circumstances the firm may prefer to make only a fixed charge, supplying the consumer with as much current as he likes without any additional charge. Or on the other hand it may prefer to instal " free of charge ", recouping itself for the cost of installation by having a high variable charge. Its fixed charge may be high, low, zero, or even negative (that is to say, instead of asking the consumer to pay for installation, the firm may actually pay him a " rent " for the privilege of installing its equipment on his premises). Similarly, its variable charge may be high or negative ; the firm may not merely supply current free, but it may also undertake to repair the equipment free of charge (this being the equivalent of a variable negative) or pay a refund to the consumer if his consumption is large.

This problem is not confined to public utilities ; it appears wherever there are complementary goods like gramophones and gramophone records, razors and razor blades, motor cars and tyres, telephone instruments and a telephone service, or other twin commodities one of which is a durable instrument which must be installed before the other can be used. If conditions were suitable a company might give away gramophones to stimulate the sale of records, or give away records to stimulate the sale of gramophones. This poses the question, what is a commodity ? In the former case the company would say that it was selling records, the gramophone being only part of the cost of production ; in the latter it would be the record that was part of the cost of selling gramophones. The enjoyment of any satisfaction involves a number of separate costs, some of which are indivisible, and it is a problem to decide how many of these indivisible costs are to be treated as different commodities and charged separately, and how many to be merged into a single variable charge. Nor is the problem confined to cases where all costs are undertaken by the same firm. Even if the gramophone companies are separate from the record companies, it may pay one set of companies to subsidise the other ; so also it might pay motor car manufacturers to subsidise the sale of petrol, and so on. Given the complementarity it is always the same problem: how high should the fixed charge be relatively to the variable?

We can also fit into the same category another problem which is really only a limiting case of the first. This is the case where the only cost is an indivisible customer cost. An example of this is a case where a firm leases machinery to manufacturers. There is only an installation cost, the cost of the machine. Yet the firm may charge either a fixed monthly rent, or a monthly rent plus a royalty varying with the output of the machine, or a royalty alone with no fixed rental.[1] Wherever a firm is leasing some durable commodity, the use of which is measurable, it can adopt, if it wishes, a two-part tariff as its charge. How high should the fixed charge be?

In competitive conditions the solution is simple: the fixed charge is no more and no less than the cost of installation. But in an imperfect market this is not necessarily the most profitable policy; then all the arguments for and against a fixed charge which we have discussed in the previous sections are once more relevant. The difference now is that we must take as our base for the fixed charge the amount of the installation cost. Arguments in favour of a fixed charge are to be interpreted as supporting a fixed charge greater than the amount of the installation cost; arguments against a fixed charge are arguments for reducing the fixed charge below installation cost, even to zero or a negative price.

Thus the element of risk may serve to reduce the fixed charge below installation cost: consumers may hesitate to wire their premises because they are not sure that their consumption of electricity will justify the initial sum involved, so the firm may assume that risk for them. Or on the other hand it may be the variable charge which they fear, and so the firm may quote a single fixed charge, allowing them to consume as much as they please. Similarly, if potential purchasers of motor cars are deterred by the high initial cost involved, the gasolene companies might profitably subsidise the motor manufacturers, and raise the price of petrol; but if it is the running cost which deters the purchaser, it will be the motor manufacturer who will profitably subsidise the gasolene company, the tyre company, the repair companies, and so on.

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[1] A well known case is that of the United Shoe Machinery Company, which leases machinery to shoe manufacturers on a two-part basis.

Similarly, where marginal costs are low and the cost of measuring consumption is high, there will be no variable charge. If the cost of producing petrol becomes small enough, car owners will be allowed all they want in return for an annual tax on their cars.

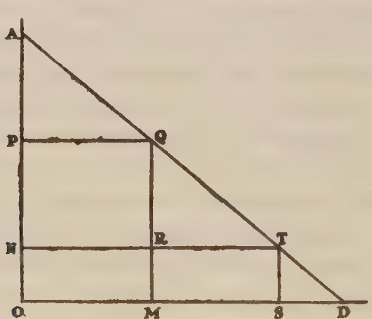
The relevance of the two elasticities is as great here as to the allocation of overhead costs. Sometimes by reducing the variable charge one can increase the amount of consumer's surplus to be obtained through the installation charge. At other times, free installation is justified, because it leads to such a terrific increase in demand for the subsidiary commodity. Discrimination, too, may justify either a high installation and low variable charge, if for instance demand is less elastic in some uses than in others ; or a fixed charge less than installation cost and high variable charge, if the firm is selling to middlemen and particularly wants to have a large number of outlets, for example if it is leasing machinery and fears the consequence of a buyers' monopoly. With customer costs, as with standing charges, there is no simple solution ; each case must be weighed on its own merits.

V

It remains to consider two-part charging from the standpoint of the public interest. We have seen that from the point of view of the entrepreneur the two-part tariff may frequently be the most profitable method of charging. Can we say that the public interest requires that the fixed charge should be exactly equal to customer cost and that anything more or less is undesirable ?

To answer this we must re-examine the incentives to making a fixed charge greater or less than customer cost. The first was that the tariff may be used as a means of allocating overheads where there are peaks in production due to peaks in demand ; we saw that it is an inferior method of doing this, even from the standpoint of the entrepreneur, but there is no substantial reason why it should not be adopted if it prove the most convenient. Secondly, a two-part tariff may be a means by which either the entrepreneur or the consumer relieves himself of risk. There is nothing in this inherently contrary to the public interest; but there is some danger of abuse if the consumer is "tied" to one undertaking in competition with others. Especially is this so if the variable charge is reduced below marginal cost, for competition between undertakings must be based on marginal cost if there is to be an "ideal" allocation of resources. Or thirdly, two-part charging may be adopted where the cost of measuring individual consumptions is disproportionately great; this too does not necessarily run counter to the public interest.

When we come to the two-part tariff as a means of stimulating consumption at the margin the matter is not so simple. It is now generally agreed that the "ideal" output of a concern is such that every consumer is getting every unit for which he is prepared to pay marginal cost.[1] If marginal cost is equal to or greater than average cost, there is no case for a fixed charge; a variable charge equal to marginal cost will cover the total costs of the firm. But if marginal cost is less than average cost, a variable charge equal to marginal cost will not cover total costs. If total costs are to be covered, either the variable charge must be greater than marginal cost, or a fixed charge levied in addition to the variable. It is easily shown that it is better to recoup the difference between average and marginal cost by a fixed charge than to add it to the variable. Consider the following diagram where *AD* is the demand curve (for convenience a straight line) of a consumer whose income



elasticity is assumed to be zero, and *ON* the marginal cost on the assumption that the cost of supplying this consumer is constant and there is no customer cost. Suppose that the firm was formerly charging a single price OP (average cost), and that it now adopts a two-part tariff with a variable charge ON. This consumer's purchases will then increase from OM to OS, income elasticity being assumed zero. If the amount of the fixed charge is equal to the area $PQRN$, the consumer will be better off than he was under the previous system since QRT will be added to his consumer's surplus. He will in fact be better off than before so long as the fixed charge is less than $PQRN + QRT$. This means that two-part charging can benefit both the buyer and the seller better than having a single variable charge, equal to average cost. The danger is that the firm may try to take the whole of the consumer's surplus, ANT, in which case two-part charging becomes the most perfect form of discrimination, and capable of the gravest exploitation. But provided that this danger is guarded against, two-part charging is clearly better than having only a variable equal to average cost, in cases where marginal cost is less than average cost.[1]

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[1] There are difficulties in applying this principle to the use of a two-part tariff by public utilities because marginal cost to the undertaking is not necessarily equal to marginal social cost; on this problem see C. L. Paine, *loc. cit.*, pp. 428–431.

Next, an objection raised against two-part charging is that small consumers may have to go without the commodity because they cannot afford to pay the fixed charge. In so far as the fixed charge is being levied as a contribution to overhead costs, this is easily met by an appropriate adjustment of the fixed charge; it is not in the interest of the undertaking, any more than of the public, that the charge should be so high as to exclude anybody. But where the fixed charge is levied to cover customer costs, the objection is equivalent to suggesting that some consumers should get the commodity for less than it costs. Thus, in 1933 the Parliamentary Secretary to the Board of Trade explained to representatives of the gas industry why he would oppose any clause permitting a two-part tariff in a forthcoming Bill:

> "I am not attempting to justify the exclusion of the minimum charge from the Bill on any ground of logic or technicality. I am doing it entirely on the political

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[1] Note that in these cases where marginal cost is less than average cost some writers have favoured an alternative solution, viz.: to charge only a variable equal to marginal cost, and to meet the difference by a subsidy out of general taxation. The points at issue between this solution and two-part charging involve questions of social justice rather than economics. For a discussion see, for example, C. L. Paine, *loc. cit.*, and H. Hotelling, "The General Welfare in Relation to Problems of Taxation and of Railway and Utility Rates", *Econometrica*, 1938 and discussion with Ragnar Frisch in *Econometrica*, 1939.

> argument that the Government are not prepared to face the opposition that would necessarily come from people in scattered places amounting to millions in total who would never understand the reasons behind a clause of this kind."[1]

An argument like this for compelling the gas industry to supply gas below cost to some consumers and to recover the loss from others does not seem to be strictly within the province of the economist.

Again, two-part charging may be used as a means of increasing or reducing the number of one's retail outlets. For example, it is sometimes alleged that one consequence of two-part charging by the United Shoe Machinery Company has been to maintain an excessive number of small shoe manufacturers. In general we may assume that it is not in the public interest to have a larger or smaller number of outlets than would emerge in conditions of perfect competition. But there is seldom perfect competition either in manufacturing industry or in retail trade. Hence the most that we can say is that the usefulness of two-part charging depends on whether or not it tends to bring about the results which would emerge under perfect competition. For example, if it is used in order to counteract monopolistic tendencies in the outlets it is in the public interest; if it is used to reduce the number of outlets in order to create an illusion of "exclusiveness", it is harmful.

The public's principal safeguard against the abuses of two-part charging is competition, which makes exploitation impossible. Where there is little competition, the abuse of two-part charging merges itself into the general problem of the control of monopoly. We cannot take up this subject here in all its ramifications. It is sufficient to point out that in the cases where the two-part tariff is most common there is already some machinery of control. In industry the outstanding case of two-part charging, the shoe machinery case, is based on patent rights; and there already exists under the patent legislation provision for the control of abuses which might well be tightened up. Elsewhere two-part charging is most common in public utilities, the price policies of which are usually subject to regulation in one way or another. Two-part charging can be of great benefit to the public; all that is needed is control adequate to prevent abuse of the power it confers on those who use it.

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[1] *Joint Committee of the House of Lords and House of Commons on Gas Prices* (H.L. 24, 91, H.C. 110), 1937, para. 16.

Maintaining Capital Intact

By A. C. Pigou

In a rough general way the concept 'maintaining capital intact' is easy to grasp. Capital consists at any given moment of a definite inventory of physical things. What these are depends in part on how the general interplay of demand and supply has worked in the past. But at any given moment they are constituted by an unambiguous physical collection. In order that capital may be kept intact, if any object embraced in this collection becomes worn out or is thrown out (scrapped), it must be replaced by 'equivalent' objects. When we have got hold of this notion we are able to develop a correlative notion, net real income. From the joint work of the whole mass of productive factors there comes an (annual) in-flowing stream of output.[1] This is gross real income. When what is required to maintain capital intact is subtracted from this there is left net real income. This is Marshall's way of approach.

In his book on *The Pure Theory of Capital*[2] Professor Hayek proposes to throw over the concept of maintaining capital intact and—necessarily—with it the concept of net real income, and to use only the concept gross real income. When he speaks of 'the really relevant magnitude, income'. (p. 298), it is gross real income that he has in mind. His reasons for this attitude are two-fold. On the one hand, except in a stationary state the notion of maintaining capital intact has no 'strict meaning'; on the other hand, it is a concept of which the economist has no need. Thus, whereas I like to set out three identities: (1) net income = net investment plus consumption, (2) net income = gross income minus depreciation, (3) net investment = gross investment minus depreciation, Professor Hayek only cares to set out one, namely gross income = gross investment plus consumption. My identities, of course, imply Professor Hayek's, but his identities do not imply mine. He is satisfied with a part only of what I require. I shall begin with the first of his two reasons.

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[1] There are, of course, depletions of capital other than those due to wear and tear and obsolescence, e.g., capital losses due to earthquake or war, which it is *not* customary to offset before reckoning net income. In what follows these will be ignored. They are discussed in my article on "Net Income and Capital Depletion" in the *Economic Journal* of June, 1935.

[2] Macmillan & Co., 1940.

The gist of it, if I have not misunderstood, is as follows. If capital were perfectly homogeneous, consisting of a single type of article only, the quantity of capital would be something perfectly self-contained and unambiguous. What this quantity amounted to at any time would, of course, be a consequence of the inter-play of demand and supply in the past. But at any given moment it would be a physical datum, independent of, prior to, affecting, not affected by, the equilibrating process. But in actual life capital is not homogeneous; it is heterogeneous, consisting of a great number of different sorts of things. It is still true that at any given moment the quantities of the several items included in it constitute an independent physical datum. But how exactly is an inventory of diverse items to be conceived as a 'physical magnitude'? Clearly it can only be so conceived if we treat the given quantities of its several items as all *equivalent to* so many units of one item; and the only plausible way of doing this is to equate a unit of B to a unit of A when it is *worth* a unit of A. But the relative values of A and B and of all other things, so far from being independent of the equilibrating process, are determined through that process. For example, the relative current values of different types of machines are affected by the rate of interest, those promising a given yield in the distant future being more valuable relatively to those promising the same yield in the near future, the lower is the rate of interest.[1] Hence the quantity of capital expressed in the only way in which it is practicable to express it is not an unambiguous physical datum, as it would be if capital were an homogeneous entity. On the contrary, the quantity expressed in terms of any given component will be different at two times if the relative values of the components have changed, even though the physical constituents of the capital stock are identical at both times. It follows that the maintenance of these physical constituents unaltered need not entail that capital is maintained intact. That concept has no clear or sensible meaning.

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[1] For, if machine A promises a yield x n years hence and machine B an equal yield m years hence (m being greater than n) the value of B = the value of A multiplied by $\left(\frac{1}{1+r}\right)^{m-n}$ where r is the annual rate of interest.

The whole of this reasoning apart from the two last sentences I accept. I accept too the view that, if maintaining capital intact has to be defined in such a way that capital need not be maintained intact even though every item in its physical inventory is unaltered, the concept is worthless. But the inference I draw is, not that we should abandon the concept; rather that we should try to define it in such a way that, when the physical inventory of goods in the capital stock is unaltered, capital *is* maintained intact; more generally, in such a way that, not indeed the quantity of capital—which, with heterogeneous items, can only be a conventionalised number—is independent of the equilibrating process, but changes in its quantity are independent of changes in that process. Let us enquire whether and how this can be done.

Suppose that capital consists of two sorts of goods only, *A* and *B*, that at date 1 there are 500 units of each, and that one unit of *A* is worth 2 units of *B*. Then the stock of capital as a whole is ' equivalent ' either to 750 units of *A* or to 1,500 units of *B*. At date 2 one unit of *A* has become worth 4 units of *B*, so that at that date 500 units of *A* plus 500 units of *B* are equivalent to either 625 units of *A* or to 2,500 units of *B*. As between the two dates one unit of *A* has become worn out or has been discarded out of the capital stock (e.g., scrapped on account of obsolescence). How many additional units of *B* must have been created in order that capital as a whole may have remained intact between the two dates? *Prima facie* it seems that there is nothing to choose between two answers, first, 2 units (in accordance with the valuation of the first date), secondly, 4 units (in accordance with that of the second date). But let us seek guidance from the special case of homogeneous capital. The quantity of this is a physically given magnitude, and nothing that happens either to people's desire attitude towards capital or to the cost (in any sense of cost) of producing new units can affect it in any way. By analogy, with heterogeneous capital also it is proper so to define quantity change that, the physical constituents of the capital stock being given, no such change can be brought about by anything that happens either to desire attitudes or to cost of production. Hence, if between dates 1 and 2 a unit of *A* disappears, capital will be maintained intact provided that a new unit of *A* is introduced irrespective of what the relative values of *A* and *B* have become and irrespective of the cost of production of *A*. If it is decided for any reason not to provide a new unit of *A*, but to provide instead some units of *B*, the number of units of *B* required to make up for the loss of the unit of *A* must then clearly be the number that at date 2 is worth—which is equivalent to saying is expected to yield the same income as —one unit of *A*.[1]

This way of defining maintenance of capital intact is readily generalised when capital consists, not of two, but of many kinds of goods. Moreover, if we suppose wearing out or discarding on the one side and replacement on the other to be a continuous balanced process, it is unambiguous. In practice, indeed, we have to do with finite time intervals. That being so, the quantity of *B* that is deemed equivalent to a given quantity of *A* over any period may be different if replacement of decayed or discarded capital takes place once a week, once a month, once a quarter or once a year ; for the relative values of *A* and *B* may undergo frequent variations. Hence the precise meaning of maintaining capital intact is relative to the length of the accounting period with which we are accustomed to work. It will be agreed, however, I think, that in normal conditions this is not an important matter. In a rough general way then this definition will serve. It is not necessary to my purpose, nor do I wish, to claim that it is the best possible one. The possibility or, if we will, the high probability, that a better one could be found only strengthens my case.

Turn then to Professor Hayek's second reason for proposing to abandon the concept maintaining capital intact, namely that it is not needed. Against this I have two considerations to offer. First, as we have seen, and as is indeed obvious, to abandon this concept entails abandoning also that of net real income. In spite, however, of Professor Hayek's claim (p. 336) that the distinction between gross and net investment—which is, of course, the same as that between gross and net income—" has no relationship to anything in the real world," it cannot be denied that both business men and the income tax authorities seek after and make practical use of this distinction—or the best approach to it that they can find. It is net income, not gross income, upon which income tax is assessed. If a Chancellor of the Exchequer were to attempt to assess it upon gross income, what an outcry there would be! Surely it is proper for economists to take cognizance of this fact and, while admitting that perfect definitions cannot be found, to try to make them as little imperfect as they can.

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[1] We must not say " which has the same cost of production as one unit of *A* would have," for that would give absurd results if *A* had become impossible to produce, i.e., had come to have infinite cost of production.

Secondly, real income is of interest to economists largely because of its relevance to what Professor Irving Fisher calls psychic income—income of satisfaction or utility. Of course the relationship between these things is highly intricate—a matter not to be discussed here. But gross and net income are not on a par. We can easily imagine two situations in one of which the production of a given gross real income entails the wearing out or using up of a much larger mass of capital elements than it does in the other. Hence net real income is, or at all events may be, a great deal more relevant to psychic income than gross real income. This is, so far as it goes, a second good reason for economists to try to disentangle it.

No doubt, if it could be shown that the disentanglement is, from the nature of the case, utterly and for ever impossible, it would be the part of wisdom to abandon the attempt. We do not want to spend our lives in squaring the circle or inventing perpetual motion machines. But that is not the situation with which we are faced. We cannot, indeed, in this field evolve concepts which are perfectly clean cut. There are bound to be rough edges. Some of us, myself among the number, have tried our hand at smoothing these down. No doubt we have in some degree failed. But we have not, I suggest, failed so grievously that others, instead of giving our baby another wash, should empty both it and the bath away.

Maintaining Capital Intact: A Reply

By F. A. v. HAYEK

PROFESSOR Pigou's defence of the conception of "maintaining capital intact" consists essentially of two parts. The first is a restatement of his own attempt to define its meaning. The second is a plea that, even if this particular attempt should not be regarded as successful, economists ought still to continue to seek for the definite and unique sense which he believes must be behind the admittedly vague meaning that this concept has in practice. I shall try briefly to answer each point in turn.

1. Professor Pigou's answer to the question of what is meant by "maintaining capital intact" consists in effect of the suggestion that for this purpose we should disregard obsolescence and require merely that such losses of value of the existing stock of capital goods be made good as are due to physical wear and tear. Once this proposition is accepted and the concept is defined so that in all instances "when the physical inventory of goods in the capital stock is unaltered, capital *is* maintained intact", the rest of his argument necessarily follows. I am unable to accept this basis of his solution.

If Professor Pigou's criterion is to be of any help, it would have to mean that we have to disregard *all* obsolescence, whether it is due to foreseen or foreseeable causes, or whether it is brought about by entirely unpredictable causes, such as the "acts of God or the King's enemy", which alone he wanted to exclude in an earlier discussion of this problem.[1] Now this seems to me to be neither useful for theoretical purposes nor in conformity with actual practice. The consequences of using this concept of "maintaining capital intact" can best be shown by considering an imaginary case. Assume three entrepreneurs, *X*, *Y*, and *Z*, to invest at the same time in equipment of different kinds but of the same cost and the same potential physical duration, say ten years. *X* expects to be able to use his machine continuously throughout the period of its physical "life". *Y*, who produces some fashion article, knows that at the end of one year his machine will have no more than its scrap value. *Z* undertakes a very risky venture in which the chances of employing the machine continuously so long as it lasts and having to scrap it almost as soon as it starts to produce are about even. According to Professor Pigou the three entrepreneurs will have to order their investments in such a way that during the first year they can expect to earn the same gross receipts: since the wear and tear of their respective machines during the first year will be the same, the amount they will have to put aside during the first year to "maintain their capital intact" will also be the same, and this procedure will therefore lead to their earning during that year the same "net" income from the same amount of capital.[1] Yet it is clear that the foreseen result of such dispositions would be that at the end of the year *X* would still possess the original capital, *Y* one tenth of it, while *Z* would have an even chance of either having lost it all or just having preserved it.

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[1] See *Economics of Welfare*, 4th ed., 1932, p. 46, and my discussion of the various stages in the evolution of Professor Pigou's theory of "maintaining capital intact" in this journal, August, 1935, particularly pp. 245–248.

I find it difficult to conceive that this procedure could have any practical value or any theoretical significance. That entrepreneur *Y*, acting in this manner, would to all intents and purposes throw his capital away, i.e. would plan to lose it, hardly needs pointing out. But take the case where a clear concept of net income is most wanted, namely, direct taxation. To treat all receipts except what is required to make good physical wear and tear as net income for income tax purposes would evidently discriminate heavily against industries where the rate of obsolescence is high and reduce investment in these industries below what is desirable. The manufacturer of wireless sets, e.g., who expects this year's model to be superseded in a year's time by technical improvements, would certainly have to restrict investment and output so as to keep prices high enough to enable him to write off obsolescing equipment in the course of the year. But if his allowance for obsolescence were treated as income, this would in effect amount to a special capital turnover tax and force him further to reduce his investment. Such a system would therefore discriminate heavily against all industries with rapid technological progress (or new and experimental industries) and thus slow down technological advance.

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[1] For our present purposes we can disregard any differences in the cost of operating the three machines.

Analytically the use of this concept of " maintaining capital intact " would be no less misleading. One of the purposes for which we want a definition of net income is to know what are the long run costs on which an adequate profit must be made in order that investment in that particular industry should appear profitable. It is immediately clear that all foreseeable obsolescence (whether it can be predicted with certainty or only with a certain degree of probability) must here be taken into account. No entrepreneur would regard the three alternatives mentioned before as equally profitable, if the gross returns to be expected were the same—although if he accepted Professor Pigou's conception of " maintaining capital intact " he would have to do so. But in that case he would not long remain an entrepreneur.

But while I feel that it is impossible simply to disregard obsolescence in this connection, it is not difficult to see why Professor Pigou is reluctant to admit it among the factors which have to be taken into account in " maintaining capital intact " : because, once one admits it, one is on the path which leads inevitably to complete scepticism concerning the possibility of any objective criterion of what " maintaining capital intact " means. Most people will agree with Professor Pigou that not *all* obsolescence has to be made good before we can consider any income as being " net ". To demand that all capital losses due to unforeseen and unforeseeable changes should be made good before any income can be described as net income might mean that not only certain individuals, but, in certain circumstances, even whole communities, might have no net income for years on end—although they might be in a position permanently to maintain their consumption at their accustomed level or even to raise it. I entirely agree with Professor Pigou's implied contention that in many such cases the making good of past losses should be regarded as new saving rather than as mere maintenance of capital. But this applies only to losses due to causes which had not been foreseen. And the real problem of maintaining capital intact arises not after such losses have been made, but when the entrepreneur plans his investment. The question is, what allowance for amortisation he ought to make in his calculations so that, in view of all the circumstances known to him, he can expect to be able to earn the same income in the future. But the knowledge on the basis of which he has to make this decision will necessarily change as time goes on, and with it will change the provision he has to make in order to achieve his aim. No watching of the " quantity " of his capital from the outside, that is, without knowing all the information he possesses at different dates, can tell us whether he has done his best to avoid involuntary encroachments upon his sources of income or the opposite. And if we know what information he commands at the different successive dates, the action which we should think most appropriate on his part is not likely to be one which would keep any measurement of his capital constant. In a changing world, where different people, and even the same people at different times, will possess different knowledge, there can be no objective standards by which we can measure whether a person has done as well in this effort as he might have done. In such a world there is no reason to expect that the quantity of capital, in whatever sense this term be meant, will ever be kept constant, even though every individual owner of capital might do all in his power to avoid that involuntary " splashing " or " stinting " which capital accounting seeks to prevent. This is a conclusion of some importance, since much of present economic theory is based on the contrary assumption, so well expressed by Professor Pigou when he wrote of " the concept of capital as an entity capable of maintaining its quantity while altering its form and by its nature always drawn to those forms on which, so to speak, the sun of profit is at the time shining."[1]

There is one more point in this connection where I am anxious to correct a wrong impression which seems to have been left by what I said on this question. I hope I nowhere did say, and I certainly ought not to have said, that with the concept of " maintaining capital intact " the concept of net income should also disappear. All that I meant to argue was that we cannot hope to define the latter by any reference to the " quantity " of capital and its changes. For an explanation of the alternative procedure I must refer to my *Pure Theory of Capital*, particularly pp. 336 *et seq.*

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[1] *Economic Journal*, June, 1935, p. 239.

2. It is unlikely that Professor Pigou would have been led to advocate a solution of the puzzle which is so obviously imperfect if it were not for the fact that among the various solutions yet suggested it seemed to be the least imperfect, and if he had not been convinced that there must be a solution. His argument is that business men and legislators constantly use the concept of maintaining capital intact and seek after a clear distinction, and that the economist ought to help them to approach as closely as possible to the ideal solution which has not yet been found. Nobody denies, of course, that the practices actually followed in this connection are of the greatest importance for the economist and that he ought to know as much about them as possible. Nor do I want to deny that these practices aim at some purpose and that the economist ought to try to help as much as he can in achieving it. The question is, however, whether this ultimate purpose of the practices ostensibly aiming at " maintaining capital intact " is adequately defined by these words. I personally have come to the conclusion that while the ordinary practice of trying to keep the money value of capital constant is in most circumstances a fairly good approximation to the real purpose of capital accounting, this is not true in all circumstances. I have tried to show that this ultimate purpose has no direct or necessary connection with changes in the quantity of capital, however measured, and that therefore no policy which aims at maintaining a particular measurement of capital constant can fully achieve that purpose in all circumstances. If this conclusion is essentially negative, it need for that reason be no less useful. If the usefulness of the practices aiming at " maintaining capital intact " have definite limitations, the important thing is that these limitations be recognised. The fact that practical men try to apply to all cases a formula which has served them well in a great many cases does not prove that in these attempts the formula must necessarily have any meaning at all. The problem which the accountant and the income tax inspector face is not what constitutes in any real sense " maintaining capital intact " in these cases—although they may have to interpret provisions which use such or similar phrases—but what are the most appropriate practices which will achieve the same end which in the more ordinary situations is adequately achieved by keeping the money value of capital constant.

The Counter-Revolution of Science*

By F. A. v. HAYEK

V. SAINT-SIMONIAN INFLUENCE

I

IT is not easy to-day to appreciate the immense stir which the Saint-Simonian movement caused for a couple of years, not only in France, but throughout Europe, or to gauge the extent of the influence which the doctrine has exercised. But there can be little doubt that this influence was far greater than is commonly realised. If one were to judge that influence by the frequency with which the Saint-Simonians were mentioned in the literature of the time, it would seem that their celebrity was as short-lived as it was great. We must not forget, however, that in its later years the school had covered itself with ridicule by its pseudo-religious harlequinades and the various escapades and follies, and that in consequence many men who had absorbed most of its social and philosophical teaching might well have been ashamed to admit their association with the cranks of Ménilmontant and the men who went to the East in search of the *femme libre*. It was only natural that people should come to treat their Saint-Simonian period as a youthful folly of which they did not want to boast. But that did not mean that the ideas they had then absorbed did not continue to operate in and through them, and a careful investigation, which has yet to be undertaken, would probably show how surprisingly widely that influence has extended.

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* This is the third and last instalment of the series of articles of which the earlier parts have appeared in the preceding issues of ECONOMICA. While, however, the first four sections of this essay were sufficiently self-contained to make unnecessary any reference to the fact that the series is intended as part of a larger work, it was less easy to avoid such references in the two sections which follow. Although this may be somewhat irritating to the reader, the author has decided to let stand various references to other parts of the larger investigation, as they serve to mark gaps which otherwise would be difficult to justify. It should, perhaps, be explained that in the intended larger work the present historical account of the "French phase" of the influence of "scientistic" views on social thought will be preceded by two theoretical studies of the character of individualism in social studies, and of the general nature of the influences exercised on them by the natural sciences and technology, and immediately followed by a series of chapters on the "German phase", beginning with a chapter on "Comte and Hegel".

Here we are not primarily interested in tracing the influence of persons or groups. From our point of view it would signify far more if it could be shown that a similar situation has produced similar ideas elsewhere without any direct influence from the Saint-Simonians. Yet any study of similar contemporaneous movements elsewhere soon reveals a close connection with the French prototypes. Even if it is doubtful whether in all these cases we are really entitled to speak of influence, and whether we should not rather say that all those who happened to have similar ideas soon found their way to Saint-Simonism, it will be worth while to cast a rapid glance over the variety of channels through which this influence acted, since the extent of it is yet so little understood, and particularly because the spreading of Saint-Simonism also meant a spreading of Comtian positivism in its early form.

The first point which it is important to realise is that this influence was by no means confined to people mainly interested in social and political speculation, but that it was even stronger in literary and artistic circles, which often became almost unconsciously the medium of spreading Saint-Simonian ideas on other matters. In France the Saint-Simonian ideas about the social function of art made a deep impression on some of the greatest writers of the time, and they are held responsible for the profound change in the literary atmosphere which then took place.[1] The demand that all art should be tendentious, that it should serve social criticism and for this purpose represent life as it is in all its ugliness led to a veritable revolution in letters.[2] Not only authors who like George Sand or Béranger had been closely associated with the Saint-Simonians, but some of the greatest writers of the period such as H. de Balzac, V. Hugo, and Eugène Sue absorbed and practised much of the Saint-Simonian teaching. Among composers Franz Liszt had been a frequent visitor to their meetings and Berlioz with a *Chant d'Inauguration des Chemins de Fer* applied Saint-Simonian precepts to music.

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[1] On this and the following see M. Thibert, *Le Rôle social de l'art d'après les Saint-Simoniens*, Paris, 1927, and H. J. Hunt, *Le Socialisme et le Romantisme en France, Etude de la Presse Socialiste de 1830 à 1848*, Oxford, 1935.

[2] For the development of the Saint-Simonian theory of art, see particularly É. Barrault, *Aux Artistes du Passé et de l'Avenir des Beaux Arts*, 1830.

2

The influence of Saint-Simonism in England was also partly in the literary field. The main expositor of their ideas here became for a time Thomas Carlyle, whose indebtedness to Saint-Simonian doctrine has been well studied and been proved beyond doubt.[1] He is the first of the many instances we shall meet where Saint-Simonism or Comtian and German influences so readily blended. Carlyle's views on the philosophy of history, his exposition of the Law of Progress in *Sartor Resartus*, his division of history into positive and negative periods, are all mainly of Saint-Simonian origin, and his interpretation of the French Revolution is penetrated with Saint-Simonian thought. The influence which he in turn exercised need not be stressed here, but it is worth pointing out that the later English Positivists recognised that his teaching had largely prepared the way for them.[2]

Better known is the influence which the Saint-Simonians exercised on J. S. Mill. In his *Autobiography*[3] he describes them as " the writers by whom, more than by any others, a new mode of thinking was brought home " to him and recounts how particularly one of their publications, which seemed to him far superior to the rest, Comte's early *System of Positive Policy*,

> " harmonized well with my existing notions to which it seemed to give a scientific shape. I already regarded the methods of physical science as the proper models for political. But the chief benefit which I derived at

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[1] See D. B. Cofer, *Saint-Simonism in the Radicalism of T. Carlyle*, College Station, 1931; F. Muckle, *Henri de Saint Simon*, Jena, 1908, pp. 345–380; E. d'Eichthal, " Carlyle et le Saint-Simonisme ", *Revue Historique*, vol. 82–3, 1903; and E. E. Neff, *Carlyle and Mill*, New York, 1926, p. 210. Why in the case of Carlyle, as with so many others, the influence of the Saint-Simonians blended so readily with that of the German philosophers will become clearer later. An interesting contrast to Carlyle's sympathetic reception of Saint-Simonian ideas is the exceedingly hostile reaction of R. Southey, who contributed to the *Quarterly Review* (Vol. XLV, July, 1831, pp. 407–450) under the heading " New Distribution of Property " a very full and intelligent account of the *Doctrine de Saint-Simon*. Tennyson, in a letter written in 1832, still says that " reform and St. Simonism are, and will continue to be, subjects of the highest interest . . . . the existence of the sect of St. Simonists is at once a proof of the immense mass of evil that is extant in the nineteenth century, and a focus which gathers all its rays. This sect is rapidly spreading in France, Germany, and Italy, and they have missionaries in London." It is a striking fact that the social novel begins in England with Disraeli just at the time when one would expect Saint-Simonian influences to work in this direction; but there is, as far as I am aware, no evidence of any influence of the Saint-Simonians on Disraeli.

[2] See C. G. Higginson, *Auguste Comte, An Address on his Life and Work*, London, 1892 p. 6, and M. Quinn, *Memoirs of a Positivist*, London, 1924, p. 38.

[3] J. S. Mill, *Autobiography*, 1873, pp. 163–167. See also *ibid.*, p. 61, where Mill describes how in 1821, at the age of fifteen, he had met in J. B. Say's house Saint-Simon himself, " not yet the founder of either a philosophy or a religion, and considered only as a clever original."

> this time from the trains of thought suggested by the Saint-Simonians and by Comte, was, that I obtained a clearer conception than ever before of the peculiarities of an era of transition in opinion, and ceased to mistake the moral and intellectual characteristics of such an era, for the normal attributes of humanity."

Mill goes on then to explain how, although he lost sight for a time of Comte, he was kept *au courant* of the Saint-Simonian's progress by G. d'Eichthal (who had also introduced Carlyle to Saint-Simonism),[1] how he read nearly everything they wrote and how it was "partly by their writings that [his] eyes were opened to the very limited and temporary value of the old political economy, which assumes private property and inheritance as indefeasible facts and freedom of production and exchange as the *dernier mot* of social improvement." From a letter to d'Eichthal[2] it appears that he became so far convinced as to be "inclined to think that [their] social organisation, under some modification or other . . . . is likely to be the final and permanent condition of our race", although he differed from them in believing that it would take many or at least several stages till mankind would be capable of realising it. We have here undoubtedly the first roots of J. S. Mill's socialist leanings. But in Mill's case, too, this was largely a preparation for the still more profound influence which Comte was later to exercise on him.

3

In no country outside France, however, did the Saint-Simonian doctrine seem to have roused greater interest than in Germany.[3] This interest began to show itself surprisingly early. Already the first *Organisateur* seems to have reached a considerable number of readers in that country.[4] Some years later it seems to have been Comte's pupil Gustave d'Eichthal who, here too, on a visit to Berlin in 1824, succeeded in interesting several people in Comte's *Système de Politique Positive*, with the result that a fairly detailed review, the only one the book ever received in any language, appeared in the *Leipziger Literatur-Zeitung*.[1] And in the then well-known political writer Friedrich Buchholz, d'Eichthal gained Comte a warm admirer, who not only in a flattering letter to Comte expressed complete agreement,[2] but who also in 1826 and 1827 published in his *Neue Monatsschrift fuer Deutschland* four anonymous articles on Saint-Simon's work, followed by a translation of the concluding part of the *Système Industriel*.[3]

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[1] G. d'Eichthal and C. Duveyrier came in 1831 to London on an official Saint-Simonian mission. See the *Address to the British Public by the Saint-Simonian Missionaries*, London, 1832, and S. Charléty, *Histoire du Saint-Simonisme*, Paris, 1931, p. 93.

[2] *The Letters of John Stuart Mill*, ed. by H. S. R. Elliot, 1910, Vol. I, p. 20. See also J. S. Mill, *Correspondance inédite avec Gustave d'Eichthal*, 1828–1842, 1864–1871, ed. by E. d'Eichthal, Paris, 1898.

[3] The *Globe* of March 16th, 1832, already reports that "nul pays n'a consacré une attention plus profonde au Saint-Simonisme" than Germany.

[4] See H. Fournel. *Bibliographie Saint-Simonienne*, Paris, 1933, p. 22.

It was, however, only in the autumn of 1830 that general interest in the Saint-Simonian movement suddenly awoke in Germany; and during the next two or three years it went like wildfire through the German literary world. The July Revolution had made Paris once more the centre of attraction for all progressives, and the Saint-Simonians, then at the height of their reputation, were the outstanding intellectual movement in that Mecca of all liberals. A veritable flood of books, pamphlets and articles of the Saint-Simonians[4] and translations of some of their writings[5] appeared in German and there was little that could not be learned about them from German sources. The wave of excitement even reached the old Goethe, who subscribed to the *Globe* (probably since its liberal days) and who, after he had warned Carlyle as early as October, 1830, "to keep away from the Société St. Simonienne,"[6] and after several recorded conversations on the subject, in May, 1831, still felt impelled to spend a day reading to get at the bottom of the Saint-Simonian doctrine.[1]

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[1] See P. Lafitte. "Matériaux pour la Biographie d'Auguste Comte. I. Relations d'Auguste Comte avec l'Allemagne." *Revue Occidentale*, Vol. VIII, 1882, premier semestre, p. 227, and "Correspondance d'Auguste Comte et Gustave d'Eichthal," *ibid.*, Vol. XII, 1891, premier semestre, pp. 186–276.

[2] *Ibid.*, p. 228 and pp. 223 *et seq.*, where the review, dated Sept. 27th, 1824, is reprinted. It gives among other things an adequate account of the "law of three stages".

[3] *Neue Monatsschrift fuer Deutschland*, Vol. XXI, 1821 (three articles) and Vol. XXII, 1827 (three articles); see also Vols. XXXIV and XXXV for later articles on the same subject. On Friedrich Buchholz, who for a period earlier in the century had been one of the most influential political writers of Prussia, and who in 1802 had published a *Darstellung eines neuen Gravitationsgesetzes fuer die moralische Welt*, see K. Bahrs, *Friedrich Buchholz, ein preussischer Publizist* 1768–1843, Berlin, 1907, and on d'Eichthal's relations to him particularly, "Correspondance d'Auguste Comte et Gustave d'Eichthal," *Revue Occidentale*, Vol. XII, premier semestre, Paris, 1891, pp. 186–276.

[4] See the list of some fifty publications on Saint-Simonism which appeared in Germany between 1830 and 1832, given by E. M. Butler, *The Saint-Simonian Religion in Germany*, Cambridge, 1926, pp. 52-59, which is, however, by no means complete. On this see R. Palgen's review of this book in *Revue de Littérature Comparée*, Vol. IX, 1929; also W. Suhge, *Der Saint-Simonismus und das junge Deutschland*, Berlin, 1935.

[5] See [Abel Transon]. *Die Saint-Simonistische Religion. Fuenf Reden an die Zoeglinge der polytechnischen Schule, nebst einem Vorbericht ueber das Leben und den Charakter Saint-Simons*, Goettingen, 1832.

[6] Quoted by Butler, *l.c.*, from *Briefe*, Weimarer Ausgabe, Vol. XLII, p. 300, letter dated October 17th, 1830.

The whole German literary world seems to have been agog for news about the novel French ideas and to some, as Rahel von Varnhagen describes it, the Saint-Simonian *Globe* became the indispensable intellectual daily bread.[2] The news about the Saint-Simonian movement appears to have been the decisive factor which in 1831 drew Heinrich Heine to Paris[3]; and, as he later said, he had not been twenty-four hours in Paris before he sat in the midst of the Saint-Simonians.[4] From Paris he and L. Boerne did much to spread information about the Saint-Simonians in German literary circles. Another important source of information for those who had stayed behind, particularly the Varnhagens, was the American Albert Brisbane, then not yet a Fourierist, but already spreading socialist ideas on his travels.[5] How profoundly these ideas were affecting the Young German poets Laube, Gutzkow, Mundt and Wiebarg has been well described by Miss E. M. Butler in her book on the *Saint-Simonian Religion in Germany*, where with much justification she describes the whole Young German school as a Saint-Simonian movement.[6] In their short but spectacular existence as a group between 1832 and 1835 they persistently, if more crudely than their French contemporaries, applied the Saint-Simonian principle that art must be tendentious, and in particular popularized their feminist doctrines and their demands for the "rehabilitation of the flesh".

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[1] See Eckermann, *Gespraeche mit Goethe*, under October 20th, 1830, and Goethe's *Tagebuecher*, under October 31st, 1830, and May 30th, 1831.

[2] *Rahel. Ein Buch des Andenkens für ihre Freunde*, Berlin, 1834, under the date of April 25th, 1832.

[3] See Butler, *l.c.*, p. 70.

[4] K. Gruen, *Die soziale Bewegung in Frankreich und in Belgien*, Darmstadt, 1845, p. 90.

[5] See Butler, *l.c.*, p. 71. It seems that some over-enthusiastic German admirers of Saint-Simon even compared him to Goethe, which induced Metternich (in a letter to Prince Wittgenstein, dated Nov. 30th, 1835) to make the tart comment that Saint-Simon, whom he had known personally, "had been as complete a cynical fool as Goethe was a great poet." See O. Draeger, *Theodor Mundt und seine Beziehungen zum jungen Deutschland*, Marburg, 1909, p. 156.

[6] *Ibid*, p. 430. Cf., in addition to the book by Suhge already quoted also F. Gerathewohl, *Saint-Simonistische Ideen in der deutschen Literatur, Ein Beitrag zur Vorgeschichte des Sozialismus*, Munich, 1920; H. v. Kleinmayr, *Welt und Kunstanschauung des jungen Deutschlands*, Vienna, 1930, and J. Dresch, *Gutzkow et la Jeune Allemagne*, Paris, 1904, on another German poet G. Buechner, who was not a member of the Young German group, but seems also to have been influenced by Saint-Simonian ideas. It is perhaps worth mentioning that he was the elder brother of L. Buechner, author of *Kraft und Stoff* (1855), and one of the main representatives of extreme materialism in Germany. On G. Buechner, cf., also G. Adler, *Geschichte der ersten sozialpolitischen Arbeiterbewegung in Deutschland*, Dresden, 1885, pp. 8 *et seq.*, which should also be consulted for some other early German socialists, particularly Ludwig Gall and later Georg Kuhlmann and Julius Treichler, whose relations to Saint-Simonism need investigation. (*Ibid.*, pp. 6, 67 and 72).

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Much more important for our purpose, but unfortunately much less explored, is the relation of the Saint-Simonians to another closely connected German group, the Young Hegelians. The curious affinity which existed between the Hegelian and the Saint-Simonian ideas and which was strongly felt by the contemporaries will occupy us on another occasion. Here we are only concerned with the actual extent to which the younger Hegelian philosophers were directly affected by Saint-Simonian ideas, and how much therefore the decisive change which led to the separation of the Young Hegelians from the orthodox followers of the philosopher may have been partly due to that influence. Our actual knowledge on this point is small, yet, as there existed close personal contacts between the Young Germans and the members of what later became the Young Hegelian group, and as some of the former as well as some of the authors of the German works on Saint-Simon were Hegelians,[1] there can be little doubt that in the group as a whole the interest in Saint-Simonism can not have been much smaller than among the Young Germans.

The period of German thought which is still so little explored and yet so crucial for the understanding of the later developments is the eighteen-thirties, during which it seems the seeds were sown which bore fruit only in the next decade.[2] We meet here with the difficulty that after the Saint-Simonians had discredited themselves, people became most reluctant to acknowledge any indebtedness, especially as the Prussian censorship was likely to object to any reference to that dangerous group. As early as 1834, G. Kuehne, a Hegelian philosopher closely connected with the Young Germans, said of Saint-Simonism, "the French counterpart of Hegelianism", that "it will scarcely any longer be permissible to mention the name, yet the basic feature of this view of life, which in this particular form has become a caricature, will have become completely embedded in social relations."[1] And when we remember that the men who were to play the decisive rôle in the revolt against orthodox Hegelianism and in the birth of German socialism, A. Ruge, L. Feuerbach, D. F. Strauss, Moses Hess and K. Rodbertus, were all in their twenties when the rage for Saint-Simonism swept through Germany,[2] it seems almost certain that they all imbibed Saint-Simonian doctrine at the time. Only of one of them, although the one from whom socialist doctrines are known to have spread more than from anybody else in the Germany of the time, Moses Hess, is it definitely known that he visited Paris in the early thirties,[3] and the traces of Saint-Simonian and Fourierist doctrines can easily be seen in his first book of 1837.[4] In the case of some of the others, as particularly in that of the most influential of the Young Hegelians, Ludwig Feuerbach, in whom Positivism and Hegelianism were so completely combined and who exercised great influence on Marx and Engels, we have no direct evidence of his having known the Saint-Simonian writings. It would be even more significant, if this Hegelian, who in providing a positivist *Weltanschauung* for the next generations of German scientists was to play a rôle similar to that of Comte in France, had arrived at his view independently of the contemporary movements in that country. But it seems practically certain that he must have come to know them in the formative period of his thought.. It is hard to believe that the young university lecturer in philosophy, who, in the summer of 1832, when Germany was reverberating with discussions of Saint-Simonism, spent months in Frankfurt reading to prepare himself for an intended visit to Paris,[5] should, almost alone among men of his kind, have escaped their influence. It seems much more likely that, as in the case of others, it was precisely the fame of this school which drew him to Paris. And although the intended visit did not take place, Feuerbach probably absorbed much of Saint-Simonian thought at that time and thus prepared himself to replace the Saint-Simonian influence among his younger contemporaries. If one reads his work with this probability in mind, any doubt disappears which one might otherwise have had whether the obvious resemblances between his work and that of Comte are accidental.[1]

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[1] Of the young Germans, T. Mundt and G. Kuehne were both Hegelian University lecturers of philosophy, and the same is true of the authors of most of the books reporting on the philosophical aspects of Saint-Simonism, particularly M. Veit, *Saint-Simon und der Saint-Simonismus*, Leipzig, 1834; F. W. Carové, *Der Saint-Simonismus und die neuere franzoesische Philosophie*, Leipzig, 1931. I have been unable to procure another work of the same period, S. R. Schneider, *Das Problem der Zeit und dessen Loesung durch die Association*, Gotha, 1834, which judging from its title seems to contain an account of the socialist aspects of Saint-Simonism.

[2] Cf. B. Groethuysen, "Les jeunes Hégéliens et les Origines du Socialisme en Allemagne," *Revue Philosophique*, Vol. 95, no. 5/6, 1923, particularly p. 379.

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[1] In a review of his friend Mundt's *Lebenswirren*, quoted by W. Grupe, *Mundts und Kuehnes Verhaeltnis zu Hegel und seinen Gegnern*, Halle, 1928, p. 76.

[2] In 1831, when the German Saint-Simonian movement began, Ruge was 29, Feuerbach 27, Rodbertus 26, Strauss 23, Hess 19, and Karl Marx 12 years of age. The corresponding ages of the leading Young Germans were Laube 25, Kuehne 25, Mundt 23 and Gutzkow 20.

[3] See T. Zlocisti, *Moses Hess*, Berlin, 1920, p. 13.

[4] M. Hess. *Die heilige Geschichte der Menschheit*, Stuttgart, 1837.

[5] See A. Kohut, *L. Feuerbach*, Leipzig, 1909, p. 77; and *Ausgewählte Briefe von und an Feuerbach*, ed. by W. Bolin, Leipzig, 1904, Vol. I, p. 256, where in a letter to his brother, dated Frankfurt, March 12th, 1832, Feuerbach explains that "Paris ist ein Ort, an den ich laengst hinstrebe, fuer den ich mich schon laengst in einem unwillkuerlichen Drange, indem ich das Franzoesische schon frueher und besonders seither betrieb, vorbereitet, ein Ort, der ganz zu meiner Individualitaet, zu meiner Philosophie passt, an dem sich daher meine Kraefte entwickeln und selbst solche, die ich noch nicht kenne, hervortreten koennen."

An important rôle in spreading French socialist thought in Germany during this period was also played by various members of the large colony of German journeymen in Paris, whose organisations became so important for the growth of the socialist movement and among whom for a time W. Weitling was the outstanding figure.[2] He and numerous other travellers must have provided a continuous stream of information about the development of French doctrine, even before, in the beginning of the 'forties, Lorenz von Stein and Karl Gruen went to Paris for a systematic study of French socialism. With the appearance of the two books[3] which were the results of these visits, particularly with Lorenz von Stein's most detailed and sympathetic account in his widely read *Socialism and Communism in Present-Day France* (1842), the whole of Saint-Simonian doctrine became common property in Germany. That Stein—incidentally another Hegelian who was most ready to absorb and spread Saint-Simonian ideas—was, with Feuerbach, one of the strongest influences that were brought to bear on Karl Marx's early development is well known.[4] Yet the belief that it was only through Stein and Gruen (and later, perhaps, Thierry and Mignet) that Marx made his acquaintance with Saint-Simonian ideas and that he studied them at first hand only later in Paris, is probably mistaken. It seems certain that he was directly affected by the early wave of Saint-Simonian enthusiasm when he was a boy of thirteen or fourteen. He himself told his friend, the Russian historian M. Kowalewski, how his paternal friend and later father-in-law, Baron Ludwig von Westphalen, had been infected by the general enthusiasm and had talked to the boy about the new ideas.[1] The fact, often noted by German scholars,[2] that many parts of Marx's doctrine, particularly the theory of the class struggle and certain aspects of his interpretation of history, bear a much closer resemblance to those of Saint-Simon than to those of Hegel, becomes even more interesting when we realise that the influence of Saint-Simon on Marx seems to have preceded that of Hegel.

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[1] See T. G. Masaryk, *Die philosophischen und soziologischen Grundlagen des Marxismus*, Vienna, 1899, p. 35.

[2] Cf. G. Adler, *Die Geschichte der ersten sozialpolitischen Arbeiterbewegung in Deutschland*, Leipzig, 1885, und K. Mielcke, *Deutscher Frühsozialismus*, Stuttgart, 1931, pp. 185–189.

[3] Lorenz von Stein, *Der Sozialismus und Kommunismus des heutigen Frankreich*, Leipzig, 1842, and K. Gruen, *Die soziale Bewegung in Frankreich und Belgien*, Darmstadt, 1845. On the latter compare K. Marx and F. Engels, *The German Ideology* (Marxist Leninist Library), London, 1938, pp. 118–179.

[4] Cf. B. Foeldes, Bemerkungen zu dem Problem Lorenz von Stein—Karl Marx, *Jahrbücher für Nationalökonomie und Statistik*, Vol. 102, 1914, and H. Nitschke, *Die Geschichtsphilosophie Lorenz von Steins* (Beiheft No. 26, *Historische Zeitschrift*), München, 1932.

Friedrich Engels, in whose separate writings Saint-Simonian elements are perhaps even more conspicuous than in those of Marx, was at one time closely associated with some of the members of the Young German movement, particularly Gutzkow, and later received his first introduction to socialist theory from M. Hess.[3] The other leaders of German socialist thought are similarly indebted. How closely most of Rodbertus' doctrines resemble those of the Saint-Simonians has often been noticed and, in view of the whole situation, there can be little doubt about the direct derivation.[4] Among the leading members of the active socialist movement in Germany, we know at least of W. Liebknecht that he steeped himself in Saint-Simonian doctrine when still very young,[5] while Lassalle received most of it from his masters Lorenz von Stein and Louis Blanc.[6] [7]

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[1] See Maxim Kowalewski in : *Karl Marx, Eine Sammlung von Erinnerungen und Aufsätzen*, herausgegeben von V. Adoratskij, Zürich, 1934, p. 223. Judging from a remark by W. Sulzbach in *Die Anfänge der materialistischen Geschichtsauffassung*, Stuttgart, 1911, p. 3, there seems to be also other independent evidence of Marx having studied Saint-Simonian writings while still at school. But I have been unable to trace it.

[2] Apart from various earlier works by Muckle, Eckstein, Cunow and Sulzbach, see particularly Kurt Breysig, *Vom historischen Werden*, Vol. II, pp. 64 *et seq.* and 84. These suggestions have been confirmed by the careful investigation by V. Volgin, "Ueber die historische Stellung Saint-Simons," *Marx–Engels Archiv*, Vol. I/1, Frankfurt a-M., 1926, pp. 82–118.

[3] Cf. G. Mayer, *Friedrich Engels, Eine Biographie*, Berlin, 1920. Vol. I, pp. 40 and 108.

[4] See H. Dietzel, *Rodbertus*, 1888, Vol. I, p. 5, Vol. II, pp. 40, 44, 51, 66, 132 *et seq.*, 184–189 ; Ch. Andler, *Les origines du socialisme d'état en Allemagne*, Paris, 1897, pp. 107, 111 ; Ch. Gide and Ch. Rist, *Histoire des doctrines économiques*, Paris, 1909, pp. 481, 484, 488, 490. ; F. Muckle, *Die grossen Sozialisten*, Leipzig, 1920, Vol. II, p. 77 ; W. Eucken, "Zur Würdigung Saint-Simons," *Jahrbuch für Volkswirtschaft und Gesetzgebung*, Vol. 45, 1921, p. 1052. The objections which have recently been raised against this contention by E. Thier, *Rodbertus, Lassalle, Adolf Wagner, Zur Geschichte des deutschen Staatssozialismus*, Jena, 1930, pp. 15–16, seem to be due to an inadequate knowledge of the Saint-Simonian writings.

[5] See F. Mehring, *Geschichte der deutschen Sozialdemokratie*, 4th ed., 1909, Vol. II, p. 180.

[6] See Ch. Andler, *l.c.*, p. 101.

[7] Another curious and yet completely unexplored case where Saint-Simonian influence on German thought seems to have been at work is that of the economist Friedrich List. There is at least evidence of his direct contact with Saint-Simonian circles. List came to Paris, which he had already visited in 1823–4, on his return from America in December, 1830. On his earlier visit he had already made the acquaintance of the first editor of the *Revue Encyclopædique*, which during this second visit of his came into the hands of the Saint-Simonians and from August, 1831, onwards was edited by H. Carnot. List's interest, as that of the Saint-Simonians, was largely in railway projects and any attempt to make contact with people of similar interests during his visit must have led him straight to the Saint-Simonians. We

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We have not yet said anything about the relations of Saint-Simonism to later French socialist schools. But this part of their influence is on the whole so well known that we can be brief. The only one of the early French socialists who was independent of Saint-Simon was of course his contemporary Charles Fourier[1]—who, with Robert Owen and Saint-Simon, is usually regarded as one of the three founders of socialism. But although the Saint-Simonians borrowed from him some elements of their doctrines—particularly with respect to the relations between the sexes—neither he nor, for that matter, Robert Owen, contributed much to that aspect of socialism which is relevant here: the deliberate organisation and direction of economic activity. His contribution there is more of a negative character. As an economy fanatic he could see nothing but waste in the competitive institutions and surpassed even the Saint-Simonians in his belief in the unbounded possibilities of technological progress. There was indeed much of the engineer mentality in him and, like Saint-Simon, he recruited his pupils largely among the polytechnicians. He is probably the earliest representative of the myth of " scarcity in the midst of plenty ", which to the engineering mind seemed as obvious 120 years ago as it does now.

Victor Considérant, the leader of the Fourierist school which gave their doctrines more coherence than did their

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know that List met Chevalier early and that he at least tried to make the acquaintance of d'Eichthal. (See his *Schriften*, *Reden*, *Briefe*, ed. by the Friedrich List Gesellschaft, Vol. IV, p. 8.) Two of his articles on railways appeared in the *Revue Encyclopædique*. I have not been able to ascertain whether the *Globe*, from which he quotes in one of these articles (a passage for which the unsuspecting editor of the *Schriften* searched in vain in the English *Globe and Traveller*,) was not, as seems much more likely, the Saint-Simonian Journal of that name. (See *Schriften*, Vol. V., 1928, pp. 62 and 554.) Some years later List translated Louis Napoleon's *Idées Napoléoniennes*, the Saint-Simonian tendencies of which we shall yet have to note. As it is now known that he wrote the first version of his chief work, the *Nationale System der Politischen Oekonomie*, during a third much more extended stay in Paris in the 'thirties as a prize essay and that in that essay he felt himself compelled to defend himself against any suspicion of " Saint-Simonism " in the sense of communism in which it was then generally understood (*Schriften*, Vol. IV, p. 294), there can be little doubt that any marked resemblance to Saint-Simonian ideas we find in his later work are likely to be due to that source. And such similarities are indeed not wanting. Particularly List's conception of " natural laws of historical development ", according to which social evolution must necessarily pass through definite stages, an idea readily accepted by the historical school of German economists, is most likely of Saint-Simonian origin. How strong in general the French influence on List was, of this his declamations against " ideology " bear witness.—That the other German author from whom the historical school of German economists derived its preoccupation with the discovery of definite stages of economic development, B. Hildebrandt, derived his ideas from the Saint-Simonians has been pointed out by J. Plenge, *Stammformen der vergleichenden Wirtschaftstheorie*, Essen, 1919, p. 15.

[1] See H. Louvancour, *De Henri Saint-Simon à Charles Fourier*, Chartres, 1913, and H. Bourgin, *Fourier*, *Contribution à l'étude du socialisme Français*, 1905, particularly pp. 415 *et seq.*

master, was a polytechnician, and most of the influential members, like Transon and Lechevalier, were old Saint-Simonians.[1] Of the rival socialist sects nearly all the leaders were former Saint-Simonians who had developed particular aspects of that doctrine, like Leroux, Cabet, Buchez and Pecqueur, or, like Louis Blanc, whose *Organisation du Travail* is pure Saint-Simonism, borrowed extensively from it. Even the most original of the later French socialists, Proudhon, however much he may have contributed to political doctrine, was in his properly socialist doctrines largely Saint-Simonian.[2] It can be said that by about 1840 Saint-Simonian ideas had ceased to be the property of a particular school and had come to form the basis of all the socialist movements. And the socialism of 1848—apart from the strong democratic or anarchistic elements which by then had been carried into it as a new and alien element—was in doctrine and personnel still largely Saint-Simonian.

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Although there is already some danger that we may appear unduly to exaggerate the importance of that little group of men, we have by no means yet surveyed the full extent of their influence. To be inspirers of practically all socialist movements[3] during the past hundred years would be enough to secure them an important place in history. The influence which Saint-Simon exercised on the study of social problems through Comte and Thierry, and the Saint-Simonians through Quetelet and Le Play is hardly less important and will occupy us again. A full account of the spreading of their ideas through Europe would have to give considerable attention to the profound influence they exercised on G. Mazzini,[4] the whole Young Italian Movement and others[5] in Italy, and to trace their effects on such divers figures as A. Strindberg in Sweden,[1] A. Herzen in Russia,[2] and others in Spain and South America.[3] Nor can we stop here to consider the frequent occurrence of similar types who sometime rallied to the Saint-Simonian flag as did the Belgian industrialist, sociologist and benefactor Ernest Solvay,[4] or the *Néo-Saint-Simoniens* who in post-war France published a new *Producteur*.[5] Such conscious or unconscious re-births we meet throughout the last hundred years.[6]

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[1] See M. Dommanget, *Victor Considérant, Sa Vie, Son Oeuvre*, Paris, 1929.

[2] On the Saint-Simonian elements in Proudon's doctrine see particularly K. Diehl. *Proudhon*, 1888–1896, Vol. III, pp. 159, 176, 280.

[3] There may even have been a direct influence on early English socialism. At least one of T. Hodgskin's letters, written in 1820 soon after his return from France, shows fairly definite traces of Saint-Simonian ideas. See E. Halévy, *Thomas Hodgskin*, Paris, 1903, pp. 58–9. I owe this reference to Dr. W. Stark.

[4] Mazzini was in the years between 1830 and 1835, particularly during his exile in France, in intimate contact with the Saint-Simonians P. Lerroux and J. Reynaud, and the effect of this can be traced throughout his work. See on this G. Salvemini, *Mazzini* (in G. d'Acandia, *La Giovine Europa*), Rome, 1915, *passim*, and O. Vossler, *Mazzini's politisches Denken und Wollen* (Beiheft No. 11 *Historische, Zeitung*) München, 1927, pp. 42–52. On Mazzini's later critical attitude toward Saint-Simonism see his " Thoughts on Democracy " in *Joseph Mazzini*, A Memoir by E. A. V[enturi], London, 1875, particularly pp. 205–217.

[5] See G. Weill, Le Saint-Simonisme hors de France. *Revue d'histoire économique et sociale*, Vol. IX, 1921, p. 109.

There is, however, one direct effect of Saint-Simonian teaching which deserves more consideration : the founders of modern socialism also did much to give Continental capitalism its peculiar form ; " monopoly capitalism ", or " finance capitalism ", growing up through the intimate connection between banking and industry (the banks organising industrial concerns as the largest shareholders of the component firms), the rapid development of joint-stock enterprises and the large railway combines are largely Saint-Simonian creations.

The history of this is mainly one of the *Crédit Mobilier* type of bank, the combined deposit and investment institution which was first created by the brothers Pereire in France and then imitated under their personal influence or by other Saint-Simonians almost all over the European Continent. One might almost say that after the Saint-Simonians had failed to bring about the reforms they desired through a political movement, or after they had grown older and more worldly, they undertook to transform the capitalist system from within and thus to apply as much of their doctrines as they could by individual effort. And it cannot be denied that they succeeded in changing the economic structure of the Continental countries into something quite different from the English type of competitive capitalism. Even if the *Crédit Mobilier* of the Pereires ultimately failed, it and its industrial concerns became the model on which the banking and capital structure in most of the industrial countries of Europe were developed, partly by other Saint-Simonians. For the Pereires the aim of their *Crédit Mobilier* was most definitely to create a centre of administration and control which was to direct according to a coherent program the railway systems, the town planning activities and the various public utilities and other industries which by a systematic policy of mergers they attempted to consolidate into a few large undertakings.[1] In Germany G. Mevissen and A. Oppenheim, who had early come under Saint-Simonian influence, went similar ways with the foundation of the Darmstaedter Bank and other banking ventures.[2] In Holland other Saint-Simonians worked in the same direction,[3] and in Austria,[4] Italy, Switzerland and Spain[5] the Pereires or their subsidiaries or connections created similar institutions. What is known as the " German " type of bank with its close connection with industry and the whole system of *Effektenkapitalismus* as it has been called is essentially the realisation of Saint-Simonian plans. This development was closely connected with the other favourite activity of the Saint-Simonians in later years, railway construction,[6] and their interest in public works of all kinds,[7]

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[1] See N. Mehlin, " Auguste Strindberg," *Revue de Paris*, Vol. XIX, Oct. 15th, 1912, p. 857.

[2] See A. Herzen, *Le monde Russe et la révolution*, Paris, 1860–62, Vol. VI, pp. 195 *et seq*.

[3] See G. Weill, *l.c.*, and J. F. Normano, Saint-Simonian America, *Social Forces*, Vol. IX, October, 1932.

[4] See Ernest Solvay, *A Propos de Saint-Simonisme* (Principes libéro-socialistes d'action sociale). Projet de lettre au journal *Le Peuple*, 1903 (printed 1916). Cf. P. Héger and C. Lefebure, *Vie d'Ernest Solvay*, Brussels, 1929, pp. 77, 150.

[5] The post-war *Producteur* was published in Paris from 1919 by a group which included G. Darquet, G. Gros, H. Clouard, M. Leroy and F. Delaisi. See on this M. Bourbonnais, *Les Néo-Saint-Simoniens et la vie sociale d'aujourd'hui*, Paris, 1923.

[6] Cf. also G. J. Gignoux, " L'Industrialisme de Saint-Simon à Walter" Rathenau," *Revue d'histoire des doctrines économiques et sociales*, 1923, and G. Salomon, Die Saint-Simonisten, *Zeitschrift für die gesamte Staatswissenschaft*, Vol. 82, 1927, pp. 550–576.

[1] See Johann Plenge, *Gruendung und Geschichte des Crédit Mobilier*, Tuebingen, 1903, particularly pp. 79 *et seq.*, and the passage quoted there on p. 139 from the Annual Report of the Crédit Mobilier for 1854 : " Quand nous touchons à une branche de l'industrie, nous désirons surtout obtenir son développement non par la voie de la concurrence, mais par voie *d'association et de fusion*, par l'emploi le plus économique des forces et non par leur opposition et leur déstruction réciproque."

There is no space here for the discussion of the Saint-Simonian theories of credit in the hands of the Pereires and we must refer in this respect to J. B. Vergeot, *Le Crédit comme stimulant et régulateur de l'industrie, La conception Saint-Simonienne, ses réalisations, etc.*, Paris, 1918, and K. Moldenhauer, *Kreditpolitik und Gesellschaftsreform*, Jena, 1932. But it may just be mentioned that the Pereires, after acquiring the *Banque de Savoy* with its note issuing privilege, in order to be in a position to put their theories into practice, became ardent advocates of " free banking " and the cause of the great controversy between the " free banking " and the " central banking " school which raged in France in and after 1864. On this see V. C. Smith, *The Rationale of Central Banking*, London, 1936, pp. 33 *et seq.*

[2] See J. Hansen, *G. v. Mevissen*, Berlin, 1906, Vol. I, pp. 60, 606, 644–6, 655, and W. Daebritz, *Gruendung und Anfaenge der Discontogesellschaft*, Berlin, Muenchen, 1931, pp. 34–36.

[3] See H. M. Hirschfeld, " Le Saint-Simonisme dans les Pays-Bas. Le Crédit Mobilier Néerlandais" : *Revue d'Economie Politique*, 1923, pp. 364–374.

[4] See F. G. Steiner, *Die Entwicklung des Mobilbankwesens in Oesterreich von den Anfaengen bis zur Krise von* 1873, Wien, 1913, pp. 38–78.

[5] See H. M. Hirschfeld, Der Crédit-Mobilier Gedanke mit besonderer Beruecksichtigung seines Einflusses in den Niederlanden. *Zeitschrift fuer Volkswirtschaft und Sozialpolitik*, N.F., Vol. III, 1923, pp. 438–465.

[6] See M. Wallon, *Les Saint-Simoniens et les Chemins de Fer*, Paris, 1908, and H. R. d'Allemagne, *Prosper Enfantin et les grandes entreprises du XIX siècle*, Paris, 1935.

[7] See the *Vues politiques et pratiques sur les travaux publiques en France*, published in 1832 by the four Saint-Simonian engineers, G. Lamé, B. P. E. Clapeyron and S. and E. Flachat.

which, as years went by, became more and more their chief interest. As Enfantin organised the Paris-Lyon-Méditerranée railway system, the Pereires built railways in Austria, Switzerland, Spain and Russia and P. Talabot in Italy, employing other Saint-Simonians as engineers on the spot to carry out their directions. Enfantin, looking back at the works of the Saint-Simonians in late life, was well entitled to say that they had "covered the earth with a net-work of railways, gold, silver, and electricity".[1]

If with their far-flung plans for industrial organisation they did not succeed in creating large combines, as was later done with the assistance of the Governments in the process of cartellisation, this was largely due to the policy of Free Trade on which France had embarked and of which some of the old Saint-Simonians, particularly M. Chevalier, but also the Pereires, were still among the chief advocates. But already others from the same circle, notably Pecqueur,[2] were agitating in the same direction as their friend Friedrich List in Germany. Yet they could not succeed till another branch from the same stem, positivism and "historism", had effectively discredited "orthodox" political economy. The arguments however which were later to justify a policy of supporting the growth of cartels were already created by the Saint-Simonians.

However far their practical influence extended, it was greatest in France during the second Empire. Not only had they the support of the Press because some of the leading journalists were old Saint-Simonians[3]; the most important fact was that Napoleon III himself had at one time been closely associated with the group, had remained on friendly terms with some of its members and even committed himself to part of their ideas in his programmatic *Idées Napoléoniennes* and some other pamphlets.[4] It is thus not surprising that the years of the second Empire became the great period of the Saint-Simonian *réalisations*. So closely indeed did they become associated with the regime that its end meant more or less also the end of their direct influence in France.[5]

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[1] Quoted by G. Pinet, *Ecrivains et penseurs polytechniciens*, Paris, 1887, p. 165.

[2] See C. Pecqueur, *Economie sociale : des intérêts du commerce, de l'industrie et de l'agriculture, et de la civilisation en général, sous l'influence des applications de la vapeur*, Paris, 1838.

[3] Particularly Jourdan, an intimate friend of Enfantin, and Guérault. On the latter compare Ste. Beuve (who at one time was also closely associated with the Saint-Simonians), *Nouveaux Lundis*, IV.

[4] *Des Idées Napoléoniennes*, 1839, *L'idée Napoléonienne*, 1840, and *De l'extinction du paupérisme*, 1844.

[5] On this whole phase of their activities see G. Weill, "Les Saint-Simoniens sous Napoleon III," *Revue des études Napoléoniennes*, May. 1913, pp. 391–406.

When to this influence of the French Empire we add the facts that Bismark's social policy and ideas were largely derived from Lassalle and thus via Louis Blanc, Lorenz von Stein and Rodbertus from Saint-Simon,[1] and that the theory of the *soziale Königtum* and state socialism, which guided the execution of that policy, can be traced, through L. von Stein and Rodbertus and others, to the same source,[2] we begin to get the measure of this influence in the nineteenth century. Even if this influence was tempered by others which in any case would have worked in the same direction, the statement of the German K. Gruen, which may conclude this survey, appears certainly in no way to exaggerate their importance. " Saint-Simonism," he wrote in 1845, " is like a seed-pod that has been opened and whose husk has been lost, while the individual seeds have found soil everywhere and have come up, one after the other. It contains . . . . finally the scientific socialism, since Saint-Simon had throughout his life been searching for the new science."[3]

VI. SOCIOLOGY: COMTE, AND HIS SUCCESSORS

I

EIGHT years after the first *Système de politique positive*[4] there began to appear that work of Comte to which his fame is mainly due. The *Cours de philosophie positive*, the literary version of the series of lectures which he had first started in 1826, and then, after recovery from his mental affliction, delivered in 1829, extended to six volumes which appeared between 1830 and 1842.[5] In devoting the best

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[1] Cf. E. Halévy, " La doctrine économique Saint-Simonienne," in *L'Ére des Tyrannies*, Paris, 1938, p. 91.

[2] See L. Brentano, " Die gewerbliche Arbeiterfrage," in Schönberg's *Handbuch der politischen Oekonomie*, 1st ed., 1882, p. 935 *et seq.*

[3] K. Gruen, *Die soziale Bewegung in Frankreich und Belgien*, 1845, p. 82. The sentence quoted is also remarkable for the first occurrence of the term " scientific socialism ".

[4] Originally published in 1822 under the title *Prospectus des travaux nécessaires pour réorganiser la société* and republished under the above title only in 1824. See above, p. 129, where it is, however, incorrectly stated that it was republished *one* year after its first publication.

[5] Page references to the *Cours* will be to the second edition, edited by E. Littré, Paris, 1864, the pagination of which is identical with the third and fourth, but not with the first and fifth editions. English quotations in the text will be taken, wherever practicable, from the admirable condensed English version by Miss Martineau (*The Positive Philosophy of Auguste Comte.* Freely translated and condensed by Harriet Martineau. Third edition in two volumes. London, 1893. In references to this edition the title will be abbreviated as *P.P.* as distinguished from the French original referred to as *Cours*).

Although the coincidence of the exact date is no more than an accident, it is perhaps years of his manhood to this theoretical task, Comte remained faithful to the conviction which had led to his break with Saint-Simon: that the political reorganisation of society could be achieved only after the spiritual foundation had been laid by a reorganisation of all knowledge.[1] But he never lost sight of the political task. The main philosophical work was duly followed by the definite *Système de politique positive* (4 vols., 1851–1854) which, in spite of all its bizarre excrescences, is a consistent execution of the plans of his youth. And if his death in 1857 had not prevented it, this would have been followed by the third part of the original plan, a similarly elaborate treatise on technology or "the action of man upon nature".

No attempt can be made here to give an adequate summary of the whole of Comte's philosophy or of its evolution. We are concerned only with the birth of the new discipline, of which Saint-Simon and the younger Comte had only dreamt but which the latter's mature works brought into existence. Yet as the whole of Comte's work is directed towards this end, this is not a sufficient restriction of our task. We shall have to confine ourselves to a consideration of those aspects of his immense work which either, because of their influence on other leading thinkers of the period, or because they are particularly representative of the intellectual tendencies of the age, are of special significance. They concern mainly the methods appropriate to the study of social phenomena, a subject which is extensively treated in the *Cours*. But it should perhaps be pointed out that it is because the subjects which mainly concern us are treated in that work that we shall confine ourselves to its contents and that we cannot accept the belief, at one time widely held, that there is a fundamental break between it and Comte's

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worth pointing out that the year 1842, in which the concluding volume of the *Cours* appeared and which for our purposes thus marks the conclusion of the "French phase" of the strand of thought with which we are here concerned, is also the year which more than any other may be regarded as the beginning of the "German phase" of the same development, with which we hope to deal on another occasion. In 1842 Lorenz von Stein's *Sozialismus und Communismus im heutigen Frankreich* and J. K. Rodbertus' first work *Zur Erkenntnis unserer staatswirtschaftlichen Zustände* appeared and Karl Marx sent his first essays to the publisher. In the preceding year Friedrich List had published his *Nationale System der Politischen Oekonomie*, and L. Feuerbac his *Wesen des Christentums*. In the following year there appeared W. Roscher's *Grundriss zu Vorlesungen über die Staatswirtschaft nach historischer Methode.* The special significance of this date in German intellectual history is well brought out by H. Freund, *Soziologie und Sozialismus. Ein Beitrag zur Geschichte der deutschen Sozialtheorie um 1842.* Würzburg, 1934.

[1] *Cours*, II, p. 438.

later work, brought about by the increasingly pathological state of his mind.[1]

A few further facts of Comte's life may be recalled here which will help to understand his views and the extent and limits of his influence. The most important feature of his career is, perhaps, that trained as a mathematician he remained one by profession. Through the greater part of his life he derived his income from coaching and examining in mathematics for the *Ecole polytechnique*—but the professorship at the institution which he coveted remained denied to him. The repeated disappointments and the quarrels caused by his recriminations, which in the end lost him even the modest positions which he held, explain to some extent his increasing isolation, his outspoken contempt for most of his scientific contemporaries, and the almost complete neglect of his work in his own country during his life-time. Although in the end he found a few enthusiastic disciples, it is on the whole not difficult to see why to most people he seems to have appeared a singularly unattractive figure, whose whole intellectual style has often repelled those who have most in common with him.[2] The man who prided himself that in a few years of his youth he had absorbed all the knowledge from which he could construct a grandiose systematisation of all human science and who, through a great part of his life, practised a " cerebral hygiene " consisting in not reading any new publications, was not likely to be readily accepted as that *preceptor mundi et universae scientiae* he claimed to be. The excessive length and prolixity and the clumsy style of his mature works were a further bar to his popularity. Yet if this restricted the number of people who became directly acquainted with his work, it was made up for by the profound effect it had on some of the most influential thinkers of the age. Although largely indirect, his influence is among the most potent in the nineteenth century, certainly where the study of social phenomena is concerned.

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[1] The essential unity of Comte's thought, which had always had its defenders, has since G. Dumas' investigations (*Psychologie de deux Messies positivistes*, Paris, 1905) been accepted by practically all French scholars concerned with these questions. See on this the recent survey of the discussion in H. Gouhier, *La jeunesse d'Auguste Comte*, Vol. I, Paris, 1933, pp. 18–29, and the two works by P. Ducassé, *Méthode et intuition chez Auguste Comte* and *Essai sur l'origine intuitive du positivisme*, both Paris, 1939.

[2] Cf. the interesting confession by Mr. H. G. Wells in his *Experiment in Autobiography*, London, 1934, p. 658 : " Probably I am unjust to Comte and grudge to acknowledge a sort of priority he had in sketching the modern outlook. But for him, as for Marx, I have a real personal dislike."

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The whole of Comte's philosophy hinges of course upon the celebrated law of the three stages which we have already met in his early essays. His very task is determined for him by that law: all the simpler sciences like physics, chemistry, and biology having reached the positive stage, it was reserved for Comte to do the same for the crowning science of the human race itself and thus to complete the main development of the human mind. The stress which Comte himself and still more his interpreters have put on the *three* separate stages is, however, rather misleading. The great contrast is between, on the one hand, the theological and the metaphysical stage (the latter being a mere "modification"[1] of the first), and, on the other, the positive stage. What he is concerned with is the continuous and gradual emancipation from the anthropomorphic interpretation of all phenomena[2] which each science completely achieves only as it reaches the positive stage. The metaphysical stage is no more than the phase of dissolution of the theological stage, the critical phase in which man has already abandoned the cruder personalistic view which seeks spirits and deities in all phenomena, but has merely replaced them with abstract entities or essences which have as little place in the truly positivist view of science. In the positive phase every attempt to explain phenomena by causes or a statement of the "mode of production" is abandoned[3]; it aims at directly connecting the observed phenomena by rules about the coexistence or sequence or, to use a modern phrase not yet used by Comte, at merely "describing" their interrelations by general and invariable laws. In other words, since the habits of thought which man had acquired in interpreting the actions of his own kind had long held up the study of external nature, and the latter had only made real progress in proportion as it got rid of this human habit, the way to progress in the study of man must be the same: we must cease to consider man anthropomorphically and must treat him as if we knew about him as little as we know about external nature. Although Comte does not say so in so many words, he comes very near, and therefore one cannot help wondering how he could have failed to see the paradoxical nature of this conclusion.[1]

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[1] Cf. *Cours*, I, p. 9: "L'état métaphysique, qui n'est au fond qu'une simple modification générale du premier." Also IV, p. 213.

[2] Cf. L. Lévy-Bruhl, *La philosophie d'Auguste Comte*, 4th ed., Paris, 1921, p. 42, and *Cours*, V, p. 25.

[3] *Cours*, II, p. 312, and IV, p. 469.

But that in the positive treatment of social phenomena man must not be treated differently from the way in which we approach the phenomena of inanimate nature is only a negative characteristic of the character which the new "natural science"[2] of society will assume. We have yet to see what the positive characteristics of the "positive" method are. This is a far more difficult task, as Comte's statements on most of the epistemological problems involved are distressingly naive and unsatisfactory. The basis of Comte's views is the apparently simple contention that "the fundamental character of all positive philosophy is to regard all phenomena as subject to invariable natural *laws*, whose precise discovery and reduction to the smallest number possible is the aim of all our effort."[3] All science deals with observed facts,[4] and, as he states in a sentence which he quotes with pride from his essay of 1825, "any proposition which does not admit of being reduced to a simple enunciation of fact, special or general, can have no real or intelligible sense."[5] But the question on which it is exceedingly difficult to find any answer in Comte's work is what precisely is meant by the "phenomena" which are all subject to invariable laws, or what he regards as "facts". The statement that all phenomena are subject to invariable natural law clearly makes sense only if we are given some guidance on what individual events are to be regarded as the same phenomena. It evidently cannot mean that everything which appears the same to our senses must behave in the same manner. The task of science is precisely to reclassify the sense impressions on the basis of their coexistence with or succession on others so as to make it possible to establish regularities for the behaviour of the newly constructed units of reference. But this is exactly what Comte objects to. The construction of such new entities as the " ether " is definitely a metaphysical procedure and any attempt to explain the " mode of production " of the phenomena as distinct from the study of the laws which connect the directly observed facts is to be proscribed. The emphasis lies on the establishment of direct relationship among the immediately given facts. But what these facts (which may be " particular " or " general " !) are does not become a problem for Comte, who approaches the question with an entirely naive and uncritical realism. As in almost all 19th century positivism,[1] this concept is left exceedingly obscure.

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[1] *Cours*, III, pp. 188–9: "Le véritable esprit général de toute philosophie théologique ou métaphysique consiste à prendre pour principe, dans l'explication des phénomènes du monde extérieur, notre sentiment immédiat des phénomènes humains ; tandis que, au contraire, la philosophie positive est toujours caractérisée, non moins profondément, par la subordination nécessaire et rationelle de la conception de l'homme à celle du monde. Quelle que soit l'incompatibilité fondamentale manifestée, à tant de titres, entre ces deux philosophies, par l'ensemble de leur développement successif, elle n'a point, en effet, d'autre origine essentielle, ni d'autre base permanente, que cette simple différence d'ordre entre ces deux notions également indispensables. En faisant prédominer, comme l'esprit humain a dû, de toute nécessité, le faire primitivement, la considération de l'homme sur celle du monde, on est inévitablement conduit à attribuer tous les phénomènes à des *volontés* correspondantes, d'abord naturelles, et ensuite extra-naturelles, ce qui constitue le système théologique. L'étude directe du monde extérieur a pu seule, au contraire, produire et développer la grande notion des lois de la nature, fondement indispensable de toute philosophie positive, et qui, par suite de son extension graduelle et continue à des phénomènes de moins en moins réguliers, a dû être enfin appliquée à l'étude même de l'homme et de la société, dernier terme de son entière généralisation. . . . L'étude positive n'a pas de caractère plus tranché que sa tendance spontanée et invariable à baser l'étude réelle de l'homme sur la connaissance préalable du monde extérieur." *Cf.* also IV, pp. 468–9.

[2] *Cours*, IV, p. 256.

[3] *Cours*, I, p. 16, cf. also II, p. 312, IV, p. 230.

[4] *Cours*, I, p. 12.

[5] *Cours*, VI, p. 600. Cf. *Early Essays on Social Philosophy*, translated from the French of Auguste Comte by H. D. Hutton, London (Routledge's *New Universal Library*), 1911, p. 223. As it is of some interest that nearly all the basic ideas were already clearly stated in Comte's *Early Essays*, references to the corresponding passages in these will occasionally be added to the references to the *Cours*.

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The only indication of what is meant by the term " fact " as used by Comte we obtain from its regular conjunction with the adjective " observed ", together with his discussion of what he means by observation. This is of great importance for its meaning in the field with which we are concerned, the study of human and social phenomena. "True observation," we are told, " must necessarily be external to the observer " and the " famous internal observation is no more than a vain parody of it ", which presupposes the " ridiculously contradictory situation of our intelligence contemplating itself during the habitual performance of its own activity ".[2] Comte accordingly consistently denies the possibility of all psychology, that " last transformation of theology ",[3] or at least of all introspective knowledge of the human mind. There are only two ways in which the phenomena of the individual mind can properly become the object of positive study: either through the study of the organs which produce them, that is through "phrenological psychology"[1]; or, since "affective and intellectual functions" have the peculiar characteristic of "not being subject to direct observation during their performance", through the study of "their more or less immediate and more or less durable results"[2]—which would seem to mean what is now called the behaviourist approach. To these only two legitimate ways of studying the phenomena of the individual mind is later added, as the result of the creation of sociology, the study of the "collective mind," the only form of psychology proper which is admitted into the positive system.

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[1] Cf. L. Grunicke, *Der Begriff der Tatsache in der positivistischen Philosophie des 19. Jahrhunderts*, Halle, 1930.

[2] *Cours*, VI, pp. 402–3, cf. also I, pp. 30–32 (" L'organe observé et l'organe observateur étant, dans ce cas, identique, comment l'observation pourrait-elle avoir lieu ? "), and III, pp. 538–541. *P.P.* II, 385, and I, 9–10, 381–2.

[3] *Cours*, I, p. 30.

As regards the first of these aspects we need here say no more than that it is remarkable that even Comte should have fallen so completely under the influence of the founder of "phrenology", the "illustrious Gall" whose "immortal works are irrevocable impressed upon the human mind",[3] as to believe that his attempt at localising particular mental "faculties" in particular parts of the brain should provide an adequate substitute for all past psychology.

The "behaviourist" approach in Comte deserves rather more attention, because in this primitive form it shows its weakness particularly clearly. Only a few pages after Comte has confined the study of the individual mind to the observation of its "more or less immediate and more or less durable results" this becomes the direct observation of "the series of intellectual and moral acts, which belongs more to natural history proper" and which he seems to regard as in some sense objectively given and known without any use of introspection or any other means different from "external observation". But Comte not only tacitly admits intellectual phenomena among his "facts" which are to be treated like any objectively observed facts of nature; he even admits, to all intents and purposes, that our knowledge of man, which we possess only because we are men ourselves and think like other men, is an indispensable condition of our interpretation of social phenomena. It can only mean this when he emphasizes that wherever we have to deal with "animal" life (as distinguished from merely vegetative life, *i.e.*, those phenomena which appear only in the higher part of the zoological scale),[1] investigation cannot succeed unless we begin with " the consideration of man, the sole being where this order of phenomena can ever be directly intelligible."[2]

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[1] *Cours*, III, p. 535.

[2] *Cours*, III, p. 540.

[3] *Cours*, III, pp. 533, 563, 570.

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Comte's theory of the three stages is closely connected with the second main characteristic of his system, his classification, or the theory of the " positive hierarchy " of the sciences. In the beginning of the *Cours* he still plays with the Saint-Simonian idea of the unification of all sciences by reducing all phenomena to one single law, the law of gravitation.[3] But gradually he abandons this belief and in the end it becomes even the subject of violent denunciation as an " absurd utopia ".[4] Instead, the " fundamental " or theoretical sciences (as distinguished from their concrete applications) are arranged in a single linear order of decreasing generality and increasing complexity, beginning with mathematics (including theoretical mechanics) and leading through astronomy, physics, chemistry, and biology (which includes all study of man as an individual) to the new and final science of social physics or sociology. As each of these fundamental sciences is " based " on those preceding it in the hierarchical order, in the sense that it makes use of all the results of the preceding sciences, *plus* some new elements peculiar to itself, it is an " indispensable complement of the law of the three stages that the different sciences can reach the positive stage only in succession in this " invariable and necessary order ". But as the last of these sciences has for its object the growth of the human mind and therefore particularly the development of science itself, it becomes, once established, the universal science which will progressively tend to absorb all knowledge in its system, although this ideal may never be fully realised.

Here we are interested only in the meaning of the assertion that sociology " rests " on the results of all other sciences and therefore could only be created after all the other sciences had reached the positive stage. This has nothing to do with the undeniable contention that the biological study of man as one of the most complicated organisms will have to make use of the results of all the other natural sciences. Sociology, as we shall see presently, does not deal with man as a physical unit but with the evolution of the human mind as a manifestation of the "collective organism" which mankind as a whole constitutes. It is the study of the organisation of society and the laws of the evolution of the human mind which are supposed to require the use of the results of all the other sciences. Now this would be justified if Comte really contended that the aim of sociology (and that part of biology which in his system replaces individual psychology) was to explain mental phenomena in physical terms, that is, if he wanted seriously to carry out his early dreams of unification of all sciences on the basis of some single universal law.[1] But this he has explicitly abandoned. His rigid schematism leads him indeed to assert that none of the phenomena belonging to any of the sciences higher up in his hierarchy can ever fully be reduced to, or explained in terms of, the preceding sciences. It is just as impossible to explain sociological phenomena purely in biological terms as, in his opinion, it will remain forever impossible to reduce chemical phenomena altogether to physical. While there will always be sociological laws which cannot be reduced to mechanical or biological laws, this break between sociology and biology is no different from the presumed difference between chemistry and physics.

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[1] *Cours*, III, pp. 429–30, and 494, *P.P.* I, p. 354.

[2] *Cours*, III, pp. 336–7, cf. also III, pp. 216–7 and *Early Essays*, p. 219. It is interesting to note that while the passage in the early work states simply : " L'action personelle de l'homme sur les autres êtres est la seule dont il comprenne le mode, par le sentiment qu'il en a " (A. Comte, *Opuscules de la philosophie sociale, 1819 1828*, Paris, 1883, p. 182), this becomes in the corresponding passage of the *Cours* (IV, p. 468) : " Ses propres actes, les seuls dont il *puisse jamais croire comprendre* le mode essentiel de production." (Italics ours.)

[3] *Cours*, I, pp. 10, 44.

[4] *Cours*, VI, p. 601.

When, however, Comte tries to prove his contention that sociology depends on a sufficient development of the other science, he fails completely, and the examples he gives as illustrations are almost childish. That in order to understand any social phenomena we have to know the *explanation* of the change of day and night and of the changes of the seasons " by the circumstances of the earth's daily rotation and annual movements ", or that " the very conception of the stability in human association could not be positively established till the discovery of gravitation,"[1] is simply not true. The results of the natural sciences may be essential data for sociology to the extent to which they actually affect the action of the men who use them. But that is true, whatever the state of natural knowledge is, and there is no reason why the sociologist need know more of natural science than those whose actions he tries to explain, and therefore no reason why the development of the study of society should have to wait on the natural sciences having reached a certain stage of development.

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[1] Cf. C. Menger, *Untersuchungen über die Methode der Sozialwissenschaften*, Leipzig, 1883, p. 15 note, where he argues that in the exact social sciences "sind die menschlichen *Individuen* und *Bestrebungen*, die letzten Elemente unserer Analyse, empirischer Natur und die exakten theoretischen Sozialwissenschaften somit in grossem Vorteil gegenüber den Naturwissenschaften. Die 'Grenzen des Naturerkennens' und die hieraus für das theoretische Verständnis der Naturphänomene sich ergebenden Schwierigkeiten bestehen in Wahrheit nicht für die exakte Forschung auf dem Gebiete der Sozialerscheinungen. Wenn A. Comte die 'Gesellschaften' als reale Organismen, und zwar als Organismen komplizierterer Art, denn die natürlichen, auffasst und ihre theoretische Interpretation als das unvergleichlich kompliziertere und schwierigere wissenschaftliche Problem bezeichnet, so befindet er sich somit in einem schweren Irrtum. Seine Theorie wäre nur gegenüber Sozialforschern richtig, welche den, mit Rücksicht auf den heutigen Zustand der theoretischen Naturwissenschaften, geradezu wahnwitzigen Gedanken fassen würden, die Gesellschaftsphänomene nicht spezifisch sozialwissenschaftlich, sondern in naturwissenschaftlich atomistischer Weise interpretieren zu wollen."

Comte claims that with the application of the positive method to social phenomena the unity of method of all sciences is established. But beyond the general characteristic of the positive method, " to abandon, as necessarily vain, all search for causes, be it primary or final, and to confine itself to the study of the invariable relations which constitute the effective laws of all observable events ",[2] it is difficult to say in what precisely this positive method consists. It certainly is not, as one might expect, the universal application of mathematical methods. Although mathematics is to Comte the source of the positive method, the field where it appeared first and in its purest form,[3] he does not believe that it can be usefully applied in the more complicated subjects, even chemistry,[4] and he is scornful about the attempts to apply statistics to biology[5] or the calculus of probability to social phenomena.[6] Even observation, the one common element of all sciences, does not appear in the same form in all of them. As the sciences become more complicated, new methods of observation become available while others appropriate to the less complicated phenomena cease to be useful. Thus, while in astronomy the mathematical method and pure observation rule, in physics and chemistry the experiment comes in as a new help. And as we proceed further, biology brings the comparative method and sociology, finally, the "historical method", while mathematics and the experiment become in turn inapplicable.[1]

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[1] *Cours*, IV, pp. 356–7, *P.P.* II, p. 97.

[2] *Cours*, VI, p. 599.

[3] *Cours*, I, p. 122, III, p. 295.

[4] *Cours*, III, p. 29.

[5] *Cours*, III, p. 291.

[6] *Cours*, IV, pp. 365–7. *Early Essays*, pp. 193–198.

There is one more aspect of the hierarchy of the sciences which must be briefly mentioned, as it is relevant to points which we shall presently have to consider. As we ascend the hierarchical scale of the sciences and the phenomena with which they deal become more complex, they also become more subject to modification by human action and at the same time less "perfect" and therefore more in need of improvement by human control. Comte has nothing but contempt for people who admire the "wisdom of nature", and he is quite certain that a few competent engineers in creating an organism for a particular task would do infinitely better.[2] And the same applies necessarily to the most complicated and therefore most imperfect of all natural phenomena, human society. The paradox that the instrument of the human mind, which according to this theory should be the most imperfect of all phenomena, should yet at the same time have the unique power to control and improve itself, does not trouble Comte in the least.

5

There is one respect in which Comte not only admits but even stresses a difference in the method, not only of sociology, but of all organic sciences from that of inorganic sciences. And although this break occurs between chemistry and biology, the importance of this "inversion" of procedure, as Comte's calls it himself, is of even greater importance with respect to sociology and we shall quote in full the passage in which he himself explains it with direct reference to the study of social phenomena. "There exists necessarily," he explains, "a fundamental difference between the whole of inorganic philosophy and the whole of organic philosophy. In the first, where solidarity between the phenomena, as we have shown, is little pronounced, and can only little affect the study of the subject, we have to explore a system where the elements are better known than the whole, and are usually even alone directly observable. But in the second, on the contrary, where man and society constitute the principal object, the opposite procedure becomes most often the only rational one, as another consequence of the same logical principle, because the whole of the object is here certainly much better known and more immediately accessible."[1]

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[1] *Cours*, III, 40e leçon, VI, p. 671.

[2] *Cours*, III, pp. 321–2.

This astounding assertion that where we have to deal with social phenomena the whole is better known than the parts is put forward as an indisputable axiom without much further explanation. It is of crucial importance for the understanding of the new science of sociology as created by Comte and accepted by his direct successors. Its significance is further enhanced by the fact that this collectivist approach is characteristic of most of the students who approach such phenomena from what we have called a "scientistic" point of view.[2] But it must be admitted that it is not easy to see why this should be so, and Comte gives us little help in this respect.

One possible justification of this view which would occur first to the modern mind, played at best a very minor rôle in Comte's thought: the idea that mass phenomena may show statistical regularities while the composing elements seem to follow no recognisable law.[3] This idea, made familiar by Comte's contemporary Quetelet,[4] is certainly not the foundation of Comte's own argument. It is indeed more than doubtful whether Comte ever took notice of Quetelet's work beyond showing indignation about the latter's using, in the subtitle of a work dealing with "mere statistics",[5] the term "social physics", which Comte regarded as his intellectual property. But though Quetelet seems thus to have been thus indirectly responsible for the substitution of the new word "sociology",[6] for what Comte till well on in the fourth volume of the *Cours* still describes as "social physics",[7] his main idea, which should have fitted so well into Comte's general approach and was to play so important a rôle in later scientistic sociology, found no place in Comte's system.

We shall probably have to see the explanation in Comte's general attitude of treating whatever phenomena a science had to deal with as immediately given "things" and in his desire to establish a similarity between biology, the science

[1] *Cours*, IV, p. 258, cf. *Early Essays*, p. 239.

[2] This has often been noted and commented upon. See particularly E. Bernheim, *Geschichtsforschung und Geschichtsphilosophie*, Göttingen, 1880, p. 48.

[3] There is one vague reference to this aspect in *Cours*, IV, pp. 270–1.

[4] See below, pp. 316–17.

[5] *Cours*, IV, p. 15, footnote.

[6] Defourny, *La Philosophie positiviste. Auguste Comte*, Paris, 1902, p. 57.

[7] *Sociologie* is introduced in *Cours*, IV, p. 185, *lois sociologiques* appears first a few pages earlier, IV, p. 180.

immediately beneath sociology in the positive hierarchy, and the science of the "collective organism". And since in biology it was unquestionably true that the organisms were better known to us than their parts, the same had to be asserted of sociology.

6

The exposition of Comte's sociology, which was to constitute the fourth volume of the *Cours*, extended in fact to three volumes considerably longer than the first three dealing with all the other sciences. The fourth volume, published in 1839, contains mainly the general considerations on the new science and its static part. The two remaining ones contain a very full and detailed exposition of sociological dynamics, that general theory of the history of the human mind, which was the main aim of Comte's labours.

The division of the subject into statics and dynamics,[1] which Comte believes to be appropriate to all sciences, he takes over, not directly from mechanics, but from biology, to which it had been applied by the physiologist De Blainville, whose work had influenced Comte to an extent equalled only by Lagrange, Fourier, and Gall.[2] The distinction, which according to De Blainville in biology corresponds to that between anatomy and physiology, or organisation and life, is made to correspond in sociology with the two great watchwords of positivism, order and progress. Static sociology deals with the laws of co-existence of social phenomena, while dynamic sociology is concerned with the laws of succession in the necessary evolution of society.

When it comes to the execution of this scheme it proves, however, that Comte has extraordinarily little to say on the static part of his subject. His disquisitions about the necessary *consensus* between all the parts of any social system, the *idée mère* of solidarity as he often calls it, which in social phenomena is even more marked than in biological, remain pretty empty generalisations, as Comte has no way (or intention) of establishing why particular institutions, or which kinds of institutions, should necessarily go together or others be incompatible. The comments on the relations between the individual, the family, and society, in the single chapter devoted to social statics, rise little above the commonplace.[1] In the discussion of the division of labour, although a distant echo of Adam Smith,[2] there is no trace of a comprehension of the factors which regulate it ; and how little he understands them becomes evident when he expressly denies that a division of intellectual labour similar to that applying to material labour is possible.[3]

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[1] *Cours*, I, p. 29, IV, pp. 230–1.

[2] The *Cours* is dedicated to Fourier and De Blainville, the two men among these four who were still alive at the time of its publication.

The whole of his statics is, however, no more than a brief sketch and of minor importance compared with the dynamic part of sociology, the fulfilment of his main ambition. It is the attempt to prove the basic contention, which Comte, as a young man of twenty-six, had expressed in a letter to a friend when he promised to show that " there were laws governing the development of the human race as definite as those determining the fall of a stone ".[4] History was to be made a science, and the essence of all science is that it should be capable of prediction.[5] The dynamic part of sociology was therefore to become a philosophy of history, as it is commonly but somewhat misleadingly called, or a theory of history as it would be more correctly described. The idea which was to inspire so much of the thought of the second half of the nineteenth century, was to write " abstract history ", " history without the names of men or even people ".[6] The new science was to provide a theoretical scheme, an abstract order in which the major changes of human civilization must necessarily follow each other.

The basis of this scheme is of course the law of the three stages and the main content of dynamic sociology is a detailed elaboration of the law. It is thus a curious feature of the Comtean system that this same law which is supposed to prove the necessity of the new science is at the same time its main and almost sole result. We need not trouble here with its elaboration in detail, beyond saying that in Comte's hands human history becomes largely identified with the growth of the natural sciences.[1] What is relevant to us are only the general implications of the idea of a natural science which deals with the laws of intellectual development of the human race, and the practical conclusions drawn from it with regard to the future organisation of society. The idea of recognisable laws, not only of the growth of individual minds, but of the development of the knowledge of the human race as a whole, presupposes that the human mind could, so to speak, look down on itself from a higher plane and be able not merely to understand its operation from the inside, but observe it, as it were, from the outside. The curious thing about this proposition, particularly in its Comtean form, is that although it explicitly recognises that the interactions of individual minds may produce something in a sense superior to what an individual mind can ever achieve, it yet claims for the same individual mind not only the power to grasp this development as a whole and to recognise the principle on which it works and even the course it must follow, but also the power to control and direct it and thereby to improve upon its uncontrolled working.

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[1] It may however be mentioned, since it does not seem to have been noticed before, that the distinction between *Gemeinschaft* and *Gesellschaft*, popularised by the German sociologist F. Toennies, already appears in Comte, who stresses the fact that " domestic relations do not constitute an association but a *union*." (*Cours*, IV, p. 419, *P.P.*, II, 116.)

[2] Smith's influence appears in a clear and rather surprising form when Comte asks : " peut-on réellement concevoir, dans l'ensemble des phénomènes naturels, un plus merveilleux spectacle que cette convergence régulire et continue d'une immensité d'individus, doués chacun d'une existence pleinement distincte, et, à un certain degré, indépendante, et néanmoins tous disposés sans cesse malgré les différences plus ou moins discordantes de leur talents et sourtout de leurs caractères, à concourir spontanément, par une multitude de moyens divers, à un même développement général, sans s'être d'ordinaire nullement concertés, et le plus souvent à l'insu de la plupart d'entre eux, qui ne croient obéir qu'à leurs impulsions personelles ? " *Cours*, IV, pp. 417–8.

[3] *Cours*, IV, p. 436, *P.P.*, II, p. 121.

[4] *Lettres d'Auguste Comte à M. Valat*, 1815–1844, Paris, 1870, pp. 138–9. (Letter dated September 8th, 1824.)

[5] *Cours*, I, p. 51, II, p. 20, VI, p. 618, *Early Essays*, p. 191.

[6] Cours, V, 14, cf. also V, p. 188, where it is explained that " ces dénominations de grec et romain ne désignent point ici essentiellement des sociétés accidentelles et particulières ; elles se rapportent surtout à des situations nécessaires et générales, qu'on ne pourrait qualifier abstraitement que par des locutions trop compliquées."

What this belief really amounts to is that the products of the process of mind can be comprehended as a whole by a simpler process than the laborious one of understanding them, and that the individual mind, looking at these results from the outside, can then directly connect these wholes by laws applying to them as entities, and finally, by extrapolating the observed development, achieve a kind of short-cut to the future development. This empirical theory of the development of the collective mind is at the same time the most naive and the most influential result of the application of the procedure of the natural sciences to social phenomena and of course based on the illusion that the phenomena of the mind are in the same sense given as objective things, and subject to external observation and control as physical phenomena. It follows from this approach that our knowledge is to be regarded as " relative " and conditioned by assignable factors—not merely from the point of view of some hypothetical more highly organised mind, but from our own point of view. It is from this point of view that the belief springs that we ourselves can recognise the "mutability"[1] of our mind and of its laws and the belief that the human race can undertake to control its own development. This idea that the human mind can, as it were, lift itself up by its own bootstraps, has remained a dominant characteristic of most sociology to the present day,[2] and we have here the root (or rather one of the roots, the other being Hegel) of that modern hubris which has found its most perfect expression in the so-called "sociology of knowledge". And the fact that this idea of the human mind controlling its own development has from its beginning been one of the leading ideas of sociology also provides the link which has always connected it with socialist ideals so that in the popular mind sociological and socialist often mean the same thing.[3]

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[1] *Cours*, I, p. 65.

It is this search for the "general laws of the continuous variations of human opinions"[4] which Comte calls the "historical method", the "indispensable complement of the positive logic".[5] But although, partly under Comte's influence, this is what the term historical method increasingly came to mean in the second half of the nineteenth century, we cannot leave this subject without pointing out that it is, of course, nearly the opposite of what historical approach really means or did mean to the great historians who in the beginning of the century tried by the application of the method to understand the genesis of social institutions. As the contrast between the two approaches which are both described as "historical method" corresponds in many ways to the general contrast between the scientistic or naturalistic approach to social phenomena and the specific methods developed by the social sciences, and as the use of the same term for two so very different views has so greatly obscured the conflict, it is, perhaps, not inappropriate if we conclude this discussion of Comte's method with a brief

[1] Cf. *Cours*, VI, pp. 620, 622.

[2] Cf. the concluding sentences in Professor Morris Ginsberg's recent *Sociology* (Home University Library, 1934, p. 244): "The conception of a self-directing humanity is new and as yet vague in the extreme. To work out its full theoretical implications, and, with the aid of the other sciences, to inquire into the possibilities of its realisation, may be said to be the ultimate object of sociology."

[3] This was, perhaps, even more true of the Continent, where it was generally known that the various "sociological societies" consisted almost exclusively of socialists.

[4] *Cours*, VI, p. 670.

[5] *Cours*, VI, p. 671.

summary of the difference. The real historical method (perhaps better described as genetic method) attempts to understand essentially unique historical situations as the result of all the circumstances which have contributed to its developments—using whatever laws of social phenomena we know in very much the same sense in which we can explain the peculiarities of an individual as the joint result of many independent factors. There is no attempt to constitute these complex situations into wholes which as such obey separate laws. The other, which is now usually meant when the " idea of evolution ", the *Entwicklungsgedanke*, is brought in as a sort of incantation, attempts to treat historical situations as species of a genus, as instances of the same type of fact, and it believes that these facts can be treated as phenomena of the kind, which according to the basic maxim of positivism, must all be " subject to laws ".[1]

7

It is hardly surprising that, with this ambitious conception of the task of the single theoretical science of society which he admits into his system, Comte should have nothing but contempt for the already existing social disciplines. It would hardly be worth while to dwell on this attitude if it were not so characteristic of the view taken at all time of the social sciences by men blinded by the scientistic prejudice, and if his own efforts had not, at least in part, to be explained by his almost complete ignorance of the achievements of the then existing social sciences. Some, as particularly the study of language, he regards as hardly worth mentioning.[2] But he takes the trouble to denounce political economy at some length, and here his severity stands in a strange contrast to his exceedingly slender knowledge of the object of his abuse. Indeed, as even one of his admirers, who has devoted a whole book to Comte's relation to economics,[3] could not help emphasizing, his knowledge of economics was practically non-existent. He knew and even admired Adam Smith, partly for his descriptive work in economics, but mainly for his *History of Astronomy*. In his early years he had made the acquaintance of J. B. Say and some other members of the same circle, particularly Destutt de Tracy. But the latter's treatment of economics in his great treatise on "ideology" between logic and morals appeared to Comte merely a frank admission of the "metaphysical" character of economics.[1] For the rest, the economists did not seem to Comte to be worth bothering about. He knew *a priori* that they had merely performed their necessary destructive rôle, typical representatives of the negative or revolutionary spirit which was the essence of the metaphysical phase. That no positive contribution to the reorganisation of society could be expected from them was evident from the fact that they had not been trained as scientists: "being almost invariably lawyers or literary men, they had no opportunity of discipline in that spirit of positive rationality which they suppose they have introduced into their researches. Precluded by their education from any idea of scientific observation of even the smallest phenomena, from any notions of natural laws, from all perception of what demonstration is, they must obviously be incapable of applying a method in which they had no practice to the most difficult of all analyses."[2] Comte indeed would admit to the study of sociology only men who had successively and successfully mastered all the other sciences and thus properly prepared themselves for the most difficult task of the study of the most complex of all phenomena.[3] Although the further development of the new science could not again present difficulties as great as those he had himself surmounted in first creating it,[4] only the very best minds could hope successfully to grapple with them. The special difficulty of this task arises from the absolute necessity of dealing with all aspects of society at the same time, a necessity dictated by the particularly close "consensus" of all social phenomena. To have sinned against this principle and to have attempted to deal with economic phenomena in isolation, "apart from the analysis of the intellectual, moral, and political state of society",[5] is one of the main reproaches against the economists. Their

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[1] On all these problems connected with the two kinds of " historism " see the excellent article by W. Eucken, Die Ueberwindung des Historismus, *Schmollers Jahrbuch für Gesetzgebung, Verwaltung und Volkswirtschaft im Deutschen Reiche*, Vol. 63–2, 1938.

[2] The " grammarians are even more absurd than the logicians." *Système de politique positive*, II, pp. 250–1.

[3] R. Mauduit, *Auguste Comte et la science économique*, Paris, 1929, particularly pp. 48–69. A full reply to Comte's strictures on political economy has been given by J. E. Cairnes in an essay on " M. Comte and Political Economy ", first published in the *Fortnightly Review*, May, 1870, and reprinted in *Essays on Political Economy*, 1873, pp. 265–311.

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[1] *Cours*, IV, p. 196.
[2] *Cours*, IV, p. 194, *P.P.*, II, p. 51.
[3] *Cours*, I, p. 84, IV, pp. pp. 144–5, 257, 306, 361.
[4] *Cours*, VI, p. 547, *P.P.*, II, p. 412.
[5] *Cours*, IV, pp. 197–8, 255.

"pretended science" presents to "all competent and experienced judges most decidedly the character of purely metaphysical concepts".[1] "If one considers impartially the sterile disputes which divide them concerning the most elementary concepts of value, utility, production, etc., one may fancy oneself attending the strangest debates of medieval scholastics on the fundamental attributes of their metaphysical entities."[2] But the main defect of political economy is its conclusion, "the sterile aphorism of absolute industrial liberty",[3] the belief that there is no need of some "special institution immediately charged with the task of regularising the spontaneous coordination" which should be regarded as merely offering the opportunity for imposing real organisation.[4] And he particularly condemns the tendency of political economy to "answer to all complaints that in the long run all classes, and especially the one most injured on the existing occasion, will enjoy a real and permanent satisfaction; a reply which will be regarded as derisive, as long as man's life is incapable of being indefinitely lengthened."[5]

8

It cannot be too much emphasized in any discussion of Comte's philosophy that he had no use for any knowledge of which he did not see the practical use.[6] And "the purpose of the establishment of social philosophy is to re-establish order in society."[7] Nothing seems to him "more repugnant to the real scientific spirit, not even the theological spirit",[8] than disorder of any kind, and nothing is perhaps more characteristic of the whole of Comte's work than "the inordinate demand for 'unity' and 'systematisation'" which J. S. Mill described as the *fons errorum* of all Comte's later speculations.[9] But even if the "frenzy for regulation"[10] is not quite as preponderant in the *Cours* as it became in the *Système de philosophie positive*, the practical conclusions to which the *Cours* leads, just because they are still free from the fantastic exaggeration of the later work, show this feature already in a marked degree. With the establishment of the " definitive "[1] philosophy, positivism, the critical doctrine which has characterised the preceding period of transition, has completed its historic mission and the accompanying dogma of the unbounded liberty of conscience will disappear.[2] To make the writing of the *Cours* possible was, as it were, the last necessary function of " the revolutionary dogma of free enquiry ",[3] but now that this is achieved, the dogma has lost its justification. All knowledge being once again unified, as it has not been since the theological stage began to decay, the next task is to set up a new intellectual government where only the competent scientists will be allowed to decide the difficult social questions.[4] Since their action will in all respects be determined by the dictates of science, this will not mean arbitrary government, and " true liberty ", which is nothing else than " a rational submission to the preponderance of the laws of nature ",[5] will even be increased.

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[1] *Cours*, IV, p. 195.

[2] *Cours*, IV, p. 197.

[3] *Cours*, IV, p. 203, *P.P.*, II, p. 54.

[4] *Cours*, IV, pp. 200–1.

[5] *Cours*, IV, p. 203, *P.P.*, II, p. 54.

[6] Cf. *Lettres à Valat*, p. 99 (letter dated September 28th, 1819): "J'ai une souveraine aversion pour les travaux scientifiques dont je n'aperçois l'utilité soit directe, soit eloignée."

[7] *Cours*, I, p. 42.

[8] *Cours*, IV, p. 139.

[9] J. S. Mill, *Auguste Comte and Positive Philosophy*, Second edition, London, 1866, p. 141.

[10] *Ibid.*, p. 196.

The detail of the social organisation which positive science will impose need not concern us here. So far as economic life is concerned, it still resembles in many respects the earlier Saint-Simonian plans, particularly in so far as the leading rôle of the bankers in guiding industrial activity is concerned.[6] But he dissents from the later outright socialism of the Saint-Simonians. Private property is not to be abolished, but the rich become the " necessary depositaries of the public capitals "[7] and the owning of property a social function.[8] This is not the only point in which Comte's system resembles the later authoritarian socialism which we associate with Prussia rather than socialism as we used to know it. In fact in some passages this resemblance with Prussian socialism, even down to the very words used, is really amazing. Thus when he argues that in the future society the " immoral " concept of individual rights will disappear and there will be only duties,[9] or that in the new society there will be no private persons but only state functionaries of various units and grades,[10] and that in consequence the most humble occupation will be ennobled by its incorporation into the official hierarchy just as the most obscure soldier has his dignity as a result of the solidarity of the military organism,[1] or finally when, in the concluding section of the first sketch of the future order, he discovers a " special disposition towards command in some and towards obedience in others " and assures us that in our innermost heart we all know " how sweet it is to obey ",[2] we might match almost every sentence with identical statements of recent German theoreticians who laid the intellectual foundations of the doctrines of the Third Reich.[3] Having been led by his philosophy to the conviction that the individual is " a pure abstraction "[4] and society as a whole a single collective being, he is of necessity led to most of the characteristic features of a totalitarian view of society.

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[1] *Cours*, I, p. 15. Cf. *Early Essays*, p. 132.
[2] *Cours*, IV, p. 43.
[3] *Cours*, IV, p. 43, *P.P.*, II, p. 12.
[4] *Cours*, IV, p. 48.
[5] *Cours*, IV, p. 147, *P.P.*, II, p. 39.
[6] *Cours*, VI, p. 495.
[7] *Cours*, VI, p. 511.
[8] *Système de politique positive*, I, p. 156.
[9] *Cours*, VI, p. 454, *Système de politique positive*, I, pp. 151, 361–3, II, p. 87.
[10] *Cours*, VI, pp. 482-485.

The later development of all this into a new Religion of Humanity with a fully developed cult is outside our subject. Needless to say that Comte, who was so completely a stranger to the one real cult of humanity, tolerance (which he would admit only in indifferent and doubtful matters),[5] was not the man to make much of that idea, which in itself does not lack a certain greatness. For the rest we cannot better summarise this last phase of Comte's thought than by the well-known epigram of Thomas Huxley, who described it as " Catholicism *minus* Christianity ".

9

Before we cast a glance on the direct influence of Comte's main work we must briefly consider certain simultaneous and in a sense parallel efforts which, from the same intellectual background, but by a different route, produced an impression which tended to strengthen the tendencies of which Comte's work is the main representative. The Belgian astronomer and statistician Quetelet, who must be mentioned here in the first place, differs from Comte not only by being a great scientist in his own field but also by the great contributions which he has made to the methods of social study. He did this precisely by that application of mathematics to social study which Comte condemned. Through his application of the " Gaussian " normal curve of error to the analysis of statistical data he became, more than any other single person, the founder of modern statistics and particularly of its application to social phenomena. The value of this achievement is undisputed and indisputable. But in the general atmosphere in which Quetelet's work became known the belief was bound to arise that the statistical methods, which he had so successfully applied to some problems of social life, were destined to become the sole method of study. And Quetelet himself contributed not a little to create that belief.

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[1] *Cours*, VI, p. 484.

[2] *Cours*, IV, p. 437, *P.P.*, II, p. 122.

[3] This applies particularly to the writings of O. Spengler and W. Sombart.

[4] *Cours*, VI, p. 590. *Discours sur l'esprit positif*, ed. 1918, p. 118.

[5] *Cours*, IV, p. 51.

The intellectual environment out of which Quetelet arose[1] is exactly the same as that of Comte: it was the French mathematicians of the circle of the *Ecole polytechnique*,[2] above all Laplace and Fourier, from whom he drew the inspiration for the application of the theory of probability to the problems of social statistics, and in most respects he, much more than Comte, must be regarded as the true continuer of their work and of that of Condorcet. His statistical work proper is not our concern. It was the general effect of his demonstration that something like the methods of the natural sciences could be applied to certain social problems and of his implied and even explicit demand that all problems of social science should be treated in a similar fashion, which operated in a direction parallel to Comte's teaching. Nothing fascinated the ensuing generation so much as Quetelet's "average man" and his celebrated conclusion of his studies of moral statistics that "we pass from one year to another with the sad perspective of seeing the same crimes reproduced in the same order and calling down the same punishments in the same proportions. Sad condition of humanity! . . . We might enumerate in advance how many individuals will stain their hands in the blood of their fellows, how many will be forgers, how many will be poisoners, almost we can enumerate in advance how many births and deaths there should occur. There is a budget which we pay with a frightful regularity; it is that of prisons, chains and the scaffold."[3] His views on the application of the mathematical methods have become more characteristic of later positivist method than anything deriving directly from Comte: "The more advanced the sciences have become, the more they have tended to enter the domain of mathematics, which is a sort of centre towards which they converge. We can judge of the perfection to which a science has come by the facility, more or less great, with which it may be approached by calculation."[1]

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[1] The fullest account of Quetelet's life and work is that by J. Lottin, *Quetelet, Statisticien et Sociologue*, Louvain–Paris, 1912.

[2] On the reputed influence of the Saint-Simonians on Quetelet compare above, p. 147.

[3] The English translation of the above passage is taken from H. M. Walker, *Studies in the History of Statistical Method*, Baltimore, 1929, p. 40.

Although Comte had condemned this view and particularly all attempts to find social laws by means of statistics, his and Quetelet's general endeavours to find natural laws of the development of the human race as a whole, to extend the Laplacean conception of universal determinism to cultural phenomena, and to make mass phenomena the sole object of the science of society were sufficiently akin to lead to a gradual fusion of their doctrines.

In the same category of contemporary efforts with similar methodological tendencies we must at least briefly mention the work of F. Le Play, polytechnician and ex-Saint-Simonian, whose descriptive social surveys became the model of much later sociological work. Though differing from Comte as well as Quetelet in more respects than they have in common, he contributed like them to the reaction against theoretical individualism, classical economics, and political liberalism, thus strengthening the particular effects of the scientistic influences with which we are here concerned.[2]

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The tracing of influences is the most treacherous ground in the history of thought and we have in the last chapter already so much sinned against the elementary canons of caution in this field that we shall now be brief. Yet the curious course which Comte's influence took is so important for the understanding of the intellectual history of the nineteenth century, and of still prevailing misconceptions about his rôle, that a few more words about it are indisspensable. In France, as already observed, Comte's immediate influence on thinkers of importance was small. But, as J. S. Mill points out, " the great treatise of M. Comte was scarcely mentioned in French literature or criticism, when it was already working powerfully on the minds of many British students and thinkers."[3] It was this influence on Mill himself and a few other leading English thinkers which became decisive for Comte's effect on European thought. Mill himself, in the sixth book of his *Logic*, which deals with the methods of the moral sciences, became little more than an expounder of Comtean doctrine. The philosopher George Lewis and George Eliot are some of the better known names of Comte's English adherents. And nothing could be more characteristic of the tremendous impact of Comte on England than that the same Miss Martineau who in her younger years had been the faithful and most successful populariser of Ricardo's doctrines, should become, not only the translator and most skilful condenser of Comte's work, but also one of its most enthusiastic disciples. As important almost as Mill himself for the spreading of positivist views among students of social phenomena was their adoption by the historian H. T. Buckle, although in this case the influence of Comte was reinforced and perhaps outweighed by that of Quetelet.

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[1] H. M. Walker, *Studies in the History of Statistical Method*, Baltimore, 1929, p. 29.

[2] Cf. L. Dimier, *Les maîtres de la contre-révolution*, Paris, 1917, pp. 215–235.

[3] J. S. Mill, *Auguste Comte and Positivism*, p. 2.

It was largely through the medium of these English writers that Comtean positivism made its entry into Germany.[1] Mill's *Logic*, Buckle's and Lecky's historical works, and later Herbert Spencer, made Comte's ideas familiar to many who were often completely unaware of their source. And although it is perhaps doubtful whether many of the German scholars who in the second half of the nineteenth century professed views closely similar to Comte's, had derived them directly from him, there were probably in no other country a greater number of influential men who tried to reform the social sciences on essentially Comtean lines. No other country seems at that time to have been more receptive of new ideas, and positivist thought together with Quetelet's new statistical methods was definitely the fashion of the period and was accepted in Germany with corresponding enthusiasm.[2] The curious phenomenon that there (and elsewhere) positivist influences should have so readily combined with that of Hegel will require separate investigation.

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[1] This penetration of Comtean positivism into Germany through the medium of English authors is a curious reversal of the earlier process when English seventeenth and eighteenth century thought had become known to Germany largely through the instrumentality of French writers, from Montesquieu and Rousseau down to J. B. Say. This fact explains to a large extent the belief, widely held in Germany, that there exists a fundamental contrast between "Western" naturalist and German idealist thought. In fact, if such a contrast can at all be drawn, there is a much more continuous difference between English thought, as represented, say, by Locke, Mandeville, Hume, Smith, Burke, Bentham and the classical economists and, on the other hand, Continental thought as represented by the two parallel and very similar developments which went from Montesquieu, through Turgot, Condorcet, down to Saint-Simon and Comte, and from Herder through Kant, Fichte, Schelling and Hegel down to the later Hegelians. The French school of thought which indeed was closely related to English thought, that of Condillac and the "ideologues", had disappeared by the time with which we are now concerned.

[2] The infiltration of positivist thought into the social sciences in Germany is a story by itself which cannot be told here. Among its most influential representatives were the two founders of *Völkerpsychologie*, M. Lazarus and H. Steinthal (the former important because of his influence on W. Dilthey), E. du Bois-Reymond (see particularly his lecture *Kulturgeschichte und Naturwissenschaft*, 1877), the Viennese circle of T. Gomperz and W. Scherer, later W. Wundt, H. Vaihinger, W. Oswalt and K. Lamprecht. See on this E. Rothacker, *Einleitung in die Geisteswissenschaften*, Tübingen, 1920, pp. 200–206, 253 *et seq.*, C. Misch, *Der junge Dilthey*, Leipzig, 1933, E. Bernheim, *Geschichtsforschung und Geschichtsphilosophie*, Göttingen, 1880, and the same authors *Lehrbuch der historischen Methode*, 5th and 6th ed., Leipzig, 1908,

We have no space here more than briefly to mention the successors which at last in France took up the Comtean tradition. Before we mention the sociologists proper we must at least mention the names of Taine and Renan, both, incidentally, representatives of that curious combination of Comtean and Hegelian thought to which we have just referred. Of the sociologists almost all the best-known ones (with the exception of Tarde), Espinas, Lévy-Bruhl, Durckheim, Simiand, stand directly in the Comtean tradition, although in their case, too, this has in part come back to France *via* Germany and with the modifications which it there experienced.[1] To attempt to trace this later influence of Comte on French thought during the Third Republic would mean to write a history of sociology in the country where for a time it gained the greatest influence. Many of the best minds who devoted themselves to social studies were here attracted by the new science and it is perhaps not too much to suggest that the peculiar stagnation of French economics during that period is at least partly due to the predominance of the sociological approach to social phenomena.[2]

That Comte's direct influence remained confined to comparatively few, but that through these very few it extended exceedingly far, is even more true of the present generation than it was of earlier ones. There will be few students of the social sciences now who have ever read Comte or know much about him. But the number of those who have absorbed most of the important elements of his system through the intermediation of a few very influential representatives of his tradition, such as T. Veblen[3] in America, L. T. Hobhouse[4] in this country, or K. Lamprecht[5] in Germany, is very large indeed. Why this influence should always have been so much more effective in an indirect manner those who have attempted to study his work will have no difficulty in understanding.

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pp. 699–716, and for the influence on some of the members of the younger historical school of German economists particularly H. Waentig, *August Comte und seine Bedeutung für die Entwicklung der Socialwissenschaft*, Leipzig, 1894, pp. 279 *et seq.*

[1] Cf. S. Deploige, *Le conflit de la morale et de la sociologie*, Louvain, 1911, particularly chapter VI on the genesis of Durckheim's system.

[2] The direct influence of Comte on Charles Maurras should perhaps also be mentioned here.

[3] Cf. W. Jaffé, *Les théories économiques et sociales de T. Veblen*, Paris, 1924, p. 35, and R. V. Teggart, *Thorstein Veblen, A chapter in American Economic Thought*, Berkeley, 1932, pp. 15, 43, 49–53. Of earlier American economists H. Carey was already an admirer of Comte.

[4] Cf. F. S. Marvin, *Comte* (in the series "Modern Sociologists"), London, 1936, p. 183.

[5] Cf. E. Bernheim, *Lehrbuch der historischen Methode*, pp. 710 *et seq.*

"The Taxation of War Wealth"[1]

By Frederic Benham

This book has seven Parts. Part I discusses economic incentive in war-time, war wealth and the mechanism of inflation, and the significance of war debt. Part II is a theoretical discussion, fortified by illustrations from history, of the taxation of excess profits. Part III deals with excess profits taxes in Great Britain; it includes a chapter on the future of our E.P.T. Part IV gives an account of excess profits taxes in other countries; it includes a chapter on Nazi war finance. Part V discusses the equity and the economic consequences of a capital levy and gives a mild blessing to an annual tax on personal capital as a source of ordinary revenue. Part VI gives an account of the capital levy in practice—in central Europe and Italy. Part VII is on "the idea of a capital levy in Great Britain" and includes a chapter on the future of the war debt. Professor Hicks is "mainly responsible for Parts I, II, and V; Mrs. Hicks for Parts III and VII; Dr. Rostas prepared most of the material for Parts IV and VI."

Let me say at once that the book is most interesting and does not disappoint the high expectations aroused by the names of its authors. It fully deserves, and will doubtless receive, a chorus of praise. Therefore I shall do as I would be done by, and produce whatever criticisms I can think of. The only alternative would be to state what the authors say—and I could not say it as well as they do.

The Government of a country at war must constantly make "political" decisions. How far must particular groups be conciliated or treated gently? How much will people stand without their enthusiasm and their efforts wilting away? Surely this explains in part (but does not excuse) the slow tempo of our economic policy. The major decision to keep a good deal of private enterprise, and freedom of choice—instead of putting the price-system in cold storage and everybody, metaphorically, in the Army—was, I think, a political decision. The powers that be thought a complete siege economy would arouse too much alarm and opposition—not only among the rich; and they feared that the sanctions of the Army would not secure enough output from conscript workers. Had the general feeling been different, had everyone been desperately eager to co-operate, to obey orders, to do anything to win the war, then, in my view, central control of everything would have been the best way to maximise our war effort. Professor Hicks appears to doubt this : he stresses rather the great difficulties of administration, declaring that to bring the whole of a nation's economic activities under effective control is, in war-time, a " practical impossibility ".

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[1] By J. R. Hicks, U. K. Hicks, and L. Rostas. Oxford University Press. 1941. 309 pp. 12s. 6d.

In any event, whether for political or administrative or other reasons, profits have been permitted. But excess profits, all above those earned by the firm in an average pre-war year, are taxed 100 per cent. Why ?

" The main *economic* purpose of an excess profits tax," writes Mrs. Hicks, " is to absorb funds which would otherwise either compete directly with the war effort by being applied to other investment, or would tend to raise the prices of consumers' goods by being distributed in dividends and spent by the receivers." Exactly. But this purpose could be, and largely is, achieved in other ways, namely by direct prohibition of such investment and by a stiff income tax and rationing. The main purpose, as everybody knows, was again a political one. Labour had to be convinced that capitalists were not making profits out of the war. Yet the implications of this fact are nowhere discussed.

It is easy to convict the authors of leaving politics more or less alone : that was probably their intention. It is far more difficult to find any objections against their economics. But there are just two points which I want to raise.

The internal war debt, we are told, may be divided into " debt which arises out of compensation paid for private assets taken over and used up or destroyed " and " debt which arises out of the borrowing of new savings ". The former is termed Compensatory Debt. It arises " without any individual citizen being benefited " ; it " represents a real loss of national capital ". The latter, the Paper Debt, " is altogether a slighter matter ". It does not correspond to any loss of any real national capital ; it does increase private property (in the form of government bonds) and therefore money incomes and taxable capacity. For the post-war debt problem this distinction is " vital ".

I doubt whether it is really helpful to divide up the debt in this way, and to call the compensatory debt much more important than the paper debt. What matters is the loss of real capital. In comparing the post-war with the pre-war period, or in estimating the burden thrown by the war onto posterity, we should see how much less the real assets of the nation are than they were (or, better, than they would have been without a war—for, as the authors do mention, savings lent to the government might otherwise have been invested). A bomb destroys a house ; the nation is at once worse off by the loss of the house. If the owner is compensated by the government, Compensatory Debt arises; if he is not compensated, he bears the loss; if there is a compulsory insurance scheme, all property-owners share it now; if Compensatory Debt is paid off subsequently by a capital levy, the contributors to the levy share it then. But how the burden is distributed is a question of equity—the loss is the loss of the house. In the last chapter, the authors point out that Compensatory Debt will probably be more important in this war than in the last and go on to say that "the destruction of industrial and domestic equipment through air-raids is itself a reduction in future sources of income which may take some years to restore. If the State gives compensation for these private losses there is an extra interest charge without any increase in taxable capacity to help towards paying it. If it does not give compensation there is a loss in taxable capacity which partly offsets any increase in taxable capacity arising from the borrowing of savings." That puts my point perfectly. From the national standpoint, it matters little whether there is Compensatory Debt or not: what matters is that the house has been bombed.

My other point concerns the repayment of debt. I believe that it would be wise during years of good trade, after the war, to keep rates of taxation high and to repay debt out of budget surpluses. One advantage of this would be a much greater chance of success for such measures as budget deficits and public works during a slump. Although the United States and France languished, economically, during the thirties, while countries like Great Britain and Australia and Finland, which balanced their budgets and cut down their public works, made a striking recovery, I believe there may be considerable scope for such measures in post-war Britain; we do not really need a dictatorship to keep down unemployment. But a government adopting them must command confidence. Budgeting for a substantial surplus would not be popular at the time, but it would lay a firm foundation for subsequent anti-slump policies.

Professor Hicks, however, seems terrified of almost any repayment of debt. He even warns us that the very desirable annual capital tax which he advocates must on no account be used for this purpose. The bogey which he fears emerges, brandishing its weapons of deflation and depression, on page 201. Repayment, we are told, "has exactly the same effect on the whole economy as if these funds had been saved voluntarily".

Nowadays we have all learned, if we did not know before, that if the public reduces its current expenditure and "there is no increased business borrowing to release this spending power at the other end" this "tends to diminish business activity". But to draw from this the conclusion that all voluntary saving, or anything resembling it, is in itself an economic evil, that as soon as the war is over we should thank Sir Robert Kindersley for his efforts and tell him to preach the opposite doctrine, seems to me monstrous. Why do a few countries enjoy standards so much higher than the rest of the world ? Because they are not so over-populated and, for this and other reasons, have enjoyed a margin for saving and have saved : somehow or other their savings have found their way into investment. Was the great material progress of the Victorian era achieved in spite of, and not largely because of, the thriftiness of our forefathers ? Is the virtue of yesterday really the vice not of to-day (for we are at war) but of to-morrow ? Is not the right conclusion rather that the post-war government should play a more active part in ensuring that savings do not run to waste ?

I hope I have misunderstood Professor Hicks. If not, then I can only say that if the virus of Mr. Keynes has had this effect on one of our very foremost economists I am thankful to be still immune.

If there is any reader of this journal who shares my general viewpoint let me hasten to assure him that the book is nevertheless a very fine piece of work. The general reader will perhaps be most attracted by those sections, presenting excellent and subtle economic analysis in friendly and vigorous prose, for which Professor Hicks is mainly responsible. Those who know how rare it is to find relevant facts selected and explained by a good economist will perhaps welcome most those parts which show the influence of Dr. Rostas. I myself have a weakness for the work of Mrs. Hicks, bubbling over with detailed knowledge and pregnant with useful suggestions for overcoming administrative and other difficulties and drawbacks. We must all be glad that one main proposal of the authors, to block some of the excess profits, has been adopted, although we may feel more doubtful about the other, for an excess income tax, on the ground that it might unduly check incentives to work. And we must all feel pleased, as well as surprised, that at last a first-class book has been born by division of labour out of a research grant.

Book Reviews

Population—A Problem for Democracy. By GUNNAR MYRDAL. Harvard University Press. 1940. xv + 237 pp. $2.00.

It is fortunate that Professor Myrdal overcame his hesitations about publishing his Godkin lectures which were given in 1938. This book of eight brief chapters is not just a competent survey of a topic, chosen because it comes within the field of the lecturer's interests, and treated adequately for a lecture audience. It is a fresh, vivid and, one might almost say, a passionate review of a problem of which the author remarks that " no other factor—not even that of peace or war—is so tremendously fatal for the long-time destinies of democracies ".

The opening chapter contains a sketch, which, it may be hoped, the author will one day fill in, of the swings of opinion about the population question and of the related changes in general social speculation. It ends with a protest against " the reluctance of economists to come to grips with the wider aspects of the population problem " and with an adverse comment on the excessive " fact-finding enthusiasm of recent decades " which he terms " an escape in facts ". In the sixth chapter he considers the more purely economic aspects and stresses that " it is the rate of change in a population during a dynamic process in time and not the quantities at any particular point of time which are of importance ". Otherwise the treatment is broadly sociological, and no one can accuse Professor Myrdal of not getting to close grip with the matter.

He uses Sweden as a point of reference for a discussion of the problem in western democracies. That country has become in recent years, as he says, " an experimental laboratory " ; the requisite data are to hand and have been adequately analysed, and there is the very comprehensive report of the Royal Commission on Population, some of the recommendations of which have already been carried out. Swedish reproduction is about 25 per cent. below parity level, and thus the position in that country is in general similar to the situation in England and Wales. In Sweden, however, the differences in fertility between town and country are very large—in the towns net reproduction is down to about 50 per cent. and in Stockholm and some other cities to under 40 per cent.—while in this country the urban-rural differences are negligible. Again, in Sweden there is a strong negative correlation between income and social status except in some cities ; in this country the evidence, whilst very incomplete, points to a recent tendency towards the closing of what was no doubt formerly a very large gap between the classes in this respect ; it should perhaps be added that while our other social classes seem to be arriving at the same size of family, the lowest of the five social classes in the conventional classification is apparently not yet fully involved in this process. These facts lead Professor Myrdal to conclude that " perhaps a third, perhaps even half of all births in Sweden " are undesired in the sense that they are the " consequence not of a desire for parenthood but simply of faulty contraceptive technique ". Thus in his view the " prospects are for a continued, and very considerable fall in reproduction in Sweden ". It does not seem necessary to anticipate a fall in the reproduction rate in this country to such a low level as our author expects in Sweden ; in no social group and in no type of locality has the rate here fallen to 40 per cent., and some observers of our situation before the war were inclined to believe that the size of family was declining less sharply than a few years ago, and might stabilise not very far below the present level.

It is not surprising that Professor Myrdal, holding such views, finds the outlook discouraging. " Even though," he says, " a very pessimistic view must be taken of the problem of setting a halt to depopulation, efforts nevertheless must not be relinquished ". The magnitude of the problem is obvious when it is calculated that the ordinary non-sterile marriage in Sweden must aim at about four children. There is some comfort, however, in the chapters which our author devotes to Swedish attitudes and responses to various aspects of the situation ; encouragement is found in the fact that, whereas a deep-rooted interest in the family was formerly a mark of, and limited to, conservatives, the desire of the radically minded for better conditions for all is now found to imply assistance to those burdened by family responsibilities. Again, when radicals first stressed the need for the emancipation of women, they thought chiefly of emancipation from family ties ; now they see that freedom for women implies conditions under which women can retain employment while marrying and having children. Further, radicals used to favour birth control solely on account of its restrictive effects ; now it is seen to have constructive possibilites, and to be an indispensable instrument for spacing children. Our author sums up his reflections on this aspect of the matter by the " general statement that population policy in Sweden has now been incorporated in a liberal instead of a reactionary system of political thinking, and that it has given a more positive content to liberal ideals and, at the same time, considerably strengthened their influence in society."

The Royal Commission, to which our author contributed so much, not only advocated the removal of all restrictions upon birth control (which advice has been followed), but also the rational instruction of all young adults in the technique of birth control. Professor Myrdal lays great stress upon getting down as soon as possible to a state of voluntary parenthood, even though the first result will certainly be a considerable decrease in births. He would build only upon a foundation of voluntary parenthood and would then aim in effect at removing hindrances to the founding of families. He summarises the elements of his plan as follows: " certain services free for all children in all economic classes, with no means test, planned as a rational co-operation between citizens in a democratic society on the principle of national solidarity, financed through the national budget, and therefore paid for according to the prevailing principles for the distribution of taxation according to capacity and ability." This is " nothing less than a socialization or nationalization of certain important parts of consumption, and carrying over from the individual budget to the public budget of cost items relating to children." He points out that " only a portion of the costs should rightly be counted against the social policy involved. As this social policy in itself has the nature of national investment, the measures are the more truly profitable in the collective or national economic calculus." Nevertheless, such a policy is " to ask a majority to tax itself severely in favour of a minority. For the majority of every population, and the great majority of a population where birth control has gone as far as it has in some Western democracies, consists of citizens who are either unmarried or have no child burdens at all, or only very light ones." Thus, our author is against family allowances in cash, the policy most favoured in this country. In support of the latter policy is the fact that extra cash in the pocket seems to many people a more real relief than extra services in kind.

It may be suggested that, although the restoration of a replacement rate will no doubt be a matter of very great difficulty, we reach a less pessimistic attitude than Professor Myrdal when we take a general view of the whole matter. Rural conditions, under which all peoples lived until recently and most still live, favour the family; urban conditions and industrial life place burdens upon those with family responsibilities the magnitude of which we are only just discovering. With the new conditions came the possibility of limiting the family. There is no cause for surprise in the fact that advantage was taken of the opportunity. The limitation of the family in the modern fashion began some sixty-five years ago; nevertheless it was only about fifteen years ago that the reproduction rate fell below parity here and in Sweden. If it is at all true, as some observers believe, that the decrease in the size of family was coming to an end in this country before the war, it means that the downward process was about to cease before anything had been done to redress the balance, now tipped so heavily against parents, and when the desirable mark had been overshot only in the last fifteen out of the whole sixty-five years of decline. In other words, in spite of the immense economic burdens placed upon parents and the overwhelming personal and social difficulties facing them, the desire for children leads to a reproduction rate somewhere about thirty per cent. below parity. If as a result of realising the danger of allowing the rate to remain at this level, steps are taken to lessen the burdens and lighten the difficulties, it ought not to be impossible in time to restore the situation.

A. M. Carr-Saunders.

Migration to and from the British Isles. By R. S. Walshaw. With an introduction by D. Caradog Jones. Jonathan Cape. 1941. 94 pp. 5s.

Within the last few years Mr. Walshaw has published some interesting studies of recent British migration movements ; in particular he has paid attention to movements between Great Britain and Eire and to movements of British citizens between Great Britain and the continent of Europe. In this book he treats, not only these topics, but also British migration to and from countries outside Europe, the movement of aliens and the part played by migration in our population balance sheet in the period between the wars. The book, though brief, is comprehensive ; figures are reduced to the minimum essential to grasp the situation and are presented with admirable clarity ; the text is written in clear and simple language. The result is a work that deserves a place in every library dealing with the social sciences.

Some aspects of British migration have attracted a good deal of attention during the last twenty years. In the decade after the last war assisted migration to the Dominions was much discussed and a considerable amount of public money was spent with the object of promoting it. Later, migration from Eire was a matter for comment, and more recently the entry of aliens has figured largely in public discussion. Until the appearance of this book it was not easy to ascertain the facts concerning these movements, and the figures as set out in it will probably be unfamiliar even to those who are well informed about the trend of the birth-rate and its consequences. It is not exactly a matter of common knowledge that, while births exceeded deaths by three million in the British Isles between 1921 and 1930, the increase in population was only two million, since a million were lost by emigration. The figure of 70,000 for Germans registered with the police in Great Britain at the outbreak of the present war has been so much quoted that it is fairly familiar ; the true figure, it may be noted, is 62,000 Germans and 12,000 Austrians. It is not so often realised that many of them had been resident here for many years and had become anglicised, if not naturalised ; the official figures for the entry of German refugees are 8,600 between 1933 and November, 1938, and 6,000 between October, 1938, and January, 1939 ; in addition 3,800 children entered the United Kingdom from Germany and Austria between 1933 and February, 1939. Such facts are neither uninteresting nor unimportant, and to have set them out clearly and lucidly is to have performed a definite service.

One small point for consideration. Mr. Walshaw says that " the cause of emigration during the whole of the nineteenth century was almost invariably some form of failure or discontent ". Surely this is much too sweeping; moreover it is hardly compatible with his remark on the preceding page that " the discovery of gold in Australia in 1851 brought into play a motive strong enough to inspire a large voluntary emigration ".

A. M. CARR SAUNDERS.

An Outline of Money. By GEOFFREY CROWTHER. Thomas Nelson & Sons, Ltd. 1941. 459 pp. 10s.

This outline presents in fact a very comprehensive survey of monetary problems, both national and international, including an extensive excursion into the border country of trade cycle theory. Although written for beginners, it has none of that stale, second-hand air which one so often finds in textbooks. It is not notably original; its leading characteristic is perhaps eclecticism; but the author has made his own synthesis, and familiar ideas are given vitality through being thought out afresh and applied to the interpretation of contemporary problems.

The scope of the book might in the opinion of the reviewer have been narrowed in one direction without disadvantage. In a general book on money it should suffice, I think, to show how the use of money and the form taken by monetary institutions lend themselves to the initiation or propagation of cumulative disturbances, without its being necessary to present a complete and all-sufficing theory of the trade cycle. But authors must be allowed to draw their own boundaries and I probably should not mention this point if I found Mr. Crowther's cyclical analysis more convincing.

The book provides the reader with a discussion both of the main theoretical issues and of the more important institutional or " applied " problems. Under the former heading, special praise is due in my view for the statement of the relationship between the quantity theory and the more dynamic savings and investment theories. In close connection with this, mention may also be made of the account of the bearing of gold supplies on commodity price movements. (I fancy the metaphor of the gramophone governor will have a long life in classrooms.) Under the second heading, there is an excellent discussion of the methods and limitations of credit control, with reference to American as well as English conditions, and a very useful account of exchange controls and clearing agreements. Both of these will be particularly valuable to the general reader or student who has not the opportunity to study more specialised works on finance.

A certain broadness of mind is a virtue in the author of a book of this type, and Mr. Crowther frequently shows this quality to advantage. This seems to me to be particularly the case in his discussion of the question of an international standard, although he takes rather a strict view of the circumstances in which devaluation is permissible. (His criterion would appear to condemn the Belgian devaluation of 1935, perhaps the clearest case of a devaluation which was generally beneficial.) But on the issue of long-period stabilisation policy, I find his attitude regrettably vague and uncertain. I agree that there is much to be said for the view that this question is seldom of immediate importance in practical policy, because the authorities, instead of starting from a position of equilibrium, are usually faced with a situation in which factors of instability are already at work; or they are confronted by a state of depression which nobody would want to perpetuate. But apparently Mr. Crowther himself inclines to the view that the failure of prices to fall with advancing productivity in the late twenties was an underlying cause of instability; and this implies a theory of long run stabilisation which needs explicit justification. Moreover, it is not the theory which has been foreshadowed earlier by the definition of inflation and of the neutral behaviour of money.

There are other points on which I am tempted to argue with Mr. Crowther. But this is not the place to pursue these differences, and indeed to attempt to do so would be to give a wrong impression. For, viewed as a whole, this is a sensible as well as an interesting book. For the general reader, it is probably the best book available and teachers will, I am sure, give it a prominent place in their reading-lists.

BARRETT WHALE.

The City: The London Financial Markets. By BARNARD ELLINGER. P. S. King & Son. 1940. xiii + 429 pp. 20s.

In the main this book must be regarded as descriptive. Its scope is rather wider than its title or sub-title might suggest, for the institutions of the central money market do not occupy more than perhaps half the book, and the remainder, which covers the customer business of the joint stock banks and the operations of miscellaneous financial agencies from building societies to the Bankers' Industrial Development Company, includes some of the most interesting parts. This descriptive work is well done. The author has been unlucky in that events have rendered his account out-of-date in certain respects, particularly as to the relations of the Exchange Account and the Issue Department of the Bank of England; and he deserves the more sympathy because he was evidently at pains to make it up to date at the time of writing (October, 1938). This indeed gives the book one of its chief merits.

The selection of the material to be presented has also been favourably affected by the fact that the author has been concerned to appraise as well as to describe. He has a certain philosophy of banking, and, following from this, an attitude towards the institutions he describes. The philosophy is mainly derived from Bagehot and Rae, and the attitude broadly that of a defender of existing institutions against critics and innovators. On this I would say that the philosophy is adequate to deal with most of the problems discussed, and that the defence is generally successful against the cruder criticisms chosen for examination. But there are other problems, particularly in connection with the trade cycle, on which there is more to be said.

A few words are called for, I feel, on the treatment of one theoretical issue, the post-Bagehot question of the creation of bank deposits. Mr. Ellinger's account of the mechanism of the process is unusually clear. But certain of his reflections on the significance of the practices described seem to me to be very questionable. In the first place, in order to rebut the suggestion that the banks have a magic power of creating money out of nothing, he insists that it is only a matter of " freeing capital, that is stored-up purchasing power ", of " transforming potential purchasing power into more liquid potential purchasing power ". Without developing the point fully, I will suggest that to minimise the importance of the creation of money by presenting it as a mere mobilisation of existing wealth is extremely dangerous. Is not this in fact the heresy of John Law ? In the second place the author repeatedly argues that the lending policy of the banks must be governed by the fact that it is " their depositors' money that they are using ". This seems to me to be a mis-statement. A more correct statement would be that the fact that the public are prepared to treat bank balances as money provides the banks with a certain power of lending and investing. The obligations which arise in connection with this are, I submit, social obligations rather than obligations to individual depositors.

The book is printed on paper of a generous thickness, and this may explain the price of 20s. Nonetheless this price seems unduly high for a volume which is presumably intended for the general reader and a wide circulation.

BARRETT WHALE.

Barriers to World Trade. By MARGARET S. GORDON. Macmillan & Co. New York. 1941. xii + 530 pp. $4.00.

Mrs. Gordon set out to write a comprehensive study of " the complicated network of international trade restrictions which grew up during the nineteen-thirties ". In a sense, she has succeeded. She has produced some five hundred pages filled mainly with facts and generalisations about facts, nearly all supported by footnote references, and there are very few types of regulation or restriction affecting international trade anywhere in the world from 1931 to 1939 about which she does not say something somewhere.

Nevertheless I feel that the book would have been more useful had not Mrs. Gordon deliberately limited its scope. Her emphasis is always upon technique. She says little about motives and refuses to discuss consequences. " No attention will be paid to the effects of the measures studied." This enables her to avoid many controversial issues, but at the same time it makes her chapters, although they are well-written and must certainly be recommended to all students of the subject, rather like a collection of waxworks : there is no life in them.

Take for example the chapters on exchange restrictions, clearing agreements, and allied subjects. They form a careful and accurate study—as far as they go. But features essential to a complete picture are either left out or inadequately stressed. Germany is not placed, as she should be, in the foreground. The extent to which her trade methods influenced the practice of other countries is not brought out. The casual reader would not gather that for her, much more than for most countries, exchange control became an instrument of central planning, and that it was directed largely to preparing for war and to meet a blockade. As for the cost of her greater self-sufficiency—of growing more food at home, of working low-grade ores, of making and using synthetic oil and Buna rubber and staple fibre—that falls quite outside the scope of the volume. The higher prices which exchange-control countries had to pay by resorting to dearer sources of supply, as trade became more bilateral, receive only a bare mention and the effect of differential exchange rates on trade " is a question which we shall not attempt to answer ".

Again, too little weight is given to the part played by foreign indebtedness. A number of countries virtually defaulted on the greater part of their interest-payments abroad, whilst claiming technically to have kept their obligations, by paying in their own currencies but pleading inability to transfer most of the payments to their foreign creditors. It was this situation which kept some of them from a formal devaluation : they maintained an absurdly high official value for their currencies mainly for paying foreign debts. If they had devalued and abandoned exchange-control the consequent all-round stimulus to their exports would have induced creditor countries to claim, and possibly, through payments agreements, to seize, a much larger share of the sums due to them. Mrs. Gordon does indeed point out that " the conclusion of a general international agreement on the question of debts and currency values at the time of the World Economic Conference of 1933, or even earlier, would have meant the avoidance of many later difficulties ", but she does not explain how foreign debts constituted a motive for retaining exchange control.

There is some economic analysis in the book—that dealing with import quotas deserves special mention—but more could have been used with advantage. For example, the theory of discriminating monopoly might have been employed to explain how producers in certain export industries have been assisted by schemes enabling them to charge considerably higher prices at home than they obtained for their exports. Again, it is not always true that "the country which has an unfavourable balance of commodity trade *vis-à-vis* the other country has the upper hand in bargaining" (p. 382). Bargaining power depends largely on the alternatives open to both parties. A good illustration is the trade dispute between Australia and Japan. Japan was on the whole in the weaker position, although it was she who had the unfavourable balance of trade, for she had to buy wool from somewhere and Australian wool sales and prices were fairly well maintained. There was just a switching-round of markets: Japan bought elsewhere and Australia sold elsewhere. But it was more difficult for Japan to find alternative markets for her cotton and rayon goods excluded from Australia. Even the "substantial concessions" (p. 410) secured by Britain for her exports were less advantageous than appeared on the surface. For example, although she secured a predominant position as a supplier of coal to the Scandinavian and Baltic markets, her total exports of coal fell while those of Germany rose owing to the keener competition (which Mrs. Gordon does mention in a footnote) in other markets.

A few further comments may be made. As to the smuggling of notes (p. 72) it is about time that somebody revealed that an important means of conveyance was certain diplomatic bags. The statement (p. 163) that "Nazi policy has recently been directed toward . . . promoting industrialisation" in the Danubian and Balkan countries gives quite a wrong impression. So does the suggestion (p. 425) that Germany discouraged the production of wheat in this area. On the contrary, the high prices she paid for wheat prevented some shifting of production, desirable in this over-populated area, towards more "labour-intensive" channels. On page 39 there is a staggering footnote. "The question as to whether or not the United States was *forced* off the gold standard is one which is still being debated." So is the question as to whether or not the earth is flat.

FREDERIC BENHAM.

A City in Transition. By C. W. RANSON. Foreword by A. D. LINDSAY. Christian Literature Society for India. Madras. 1938. vii + 276 pp. Rs. 2-8-0.

Mr. Ranson has set out to study some of the processes and problems of urbanization in Southern India, from the point of view of its premier city, Madras. His idea was to present—as fully as the inadequate statistical data permit—a series of pictures of various aspects of social life. Starting with a short historical introduction, he first of all analyses the growth and movement of the population, and the causes thereof, reaching the important conclusion that low and falling prices stimulate, whilst rising prices retard, emigration to the city from rural areas. This supports the opinion, expressed as long ago as 1931 by the Royal Commission on Labour, that the Indian peasant is " pushed, not pulled," to industry and industrial centres.

It seems unfortunate, to say the least, that " industrialisation " (at least in the sense of an increase in industrial labour), so ardently desired by many Indians, should proceed with relative rapidity only when the masses are suffering seriously from the miserably low market prices obtained by that portion of their output which they are obliged to sell in order to make fixed and unavoidable payments, such as rent, land revenue, interest on debt, wages (where any labour is hired), and for the purchase of household goods not self-produced. But the reasons why this has been so, in the past, are vividly portrayed in Mr. Ranson's subsequent sections on " Housing " and " Poverty ". The Indian City wage-earner may handle more money than his rural brother, but his conditions of life and work have, hitherto, been so utterly wretched that a slight income advantage fails to provide adequate compensation. If it is desired, in the future, to attract workers to industry, drastic reforms, involving the social provision of at lease the minimum amenities of civilised life, will be necessary. This, rather than the mere raising of money wages is, in my opinion, essential if the present wartime advance towards industrialisation is to prove a blessing, not a curse, to the Indian workers and their families.

In his final section, " Society," Mr. Ranson examines social institutions, such as the caste and family systems, and the relations between them and urbanization. Despite the disrupting influences of City life, caste divisions persist, but " caste has . . . undergone a process of continuous adaptation which has tended to become increasingly radical and has resulted in a state of elaborate confusion ".

In conclusion it may be said that both academically and as a result of his years of practical experience amongst the poor of Madras, Mr. Ranson is excellently equipped to carry out his interesting and important task.

VERA ANSTEY.

Industrial Development of Mysore. By R. BALAKRISHNA. Bangalore Press. 1940. 305 pp. Rs. 5.

The Indian States, as contrasted with British and Indian Provinces, have hitherto been considered as backward areas, of little interest to the West. Even in India little accurate, up-to-date information has been available. Mr. Balakrishna's study of economic and industrial development and organisation in Mysore—one of the most advanced States, and one with considerable industrial potentialities—shows that here is one State, at least, which is developing rapidly, along lines of its own and with a vigorous and independent economic policy.

The author starts with a general survey of Mysore's human and 'natural' resources, and then reviews the development, structure and finance of first, small, and then, large, industries. Next he discusses the progress of public utilities (with special reference to railways, rail-road competition, and hydroelectricity), the relation of the State to industry, external trade and labour problems. Finally he sums up the trend of development, with particular reference to the part played by Governmental policy therein. The material available is fuller for Mysore than for most other Indian States, but even so there is much room for improvement, for instance in Government publications, whilst this is the first published work by an economist on the subject. One of the most valuable sections of Mr. Balakrishna's work is, therefore, his 'Note to Biography', in which he surveys the available material and makes suggestions for improvements.

Mysore is in a peculiar position. It has considerable industrial potentialities and a well-marked economic entity, but is dependent upon the rest of India for its external trade, and has no fiscal powers. As an entirely inland country, surrounded by protectionist British India, it can neither adopt free trade, nor impose tariffs to suit its own fiscal and industrial needs. Private capital and enterprise have hitherto been deficient, with the result that until recently indigenous effort has been confined to small-scale, local concerns, and the only important industries (gold-mining and cotton textiles) had been initiated by foreign enterprise and capital. In the second decade of this century the State began to intervene and has stimulated industry in three phases: (i) The Economic Conference of 1911 set up permanent machinery to investigate resources and potentialities and to disseminate information. It also led to the establishment of the Bank of Mysore, of the Chamber of Commerce, and of the Department of Industries (presided over by Sir Alfred Chatterton) which has subsequently played such a large part in industrial development; (ii) From about 1917 the Government began to undertake industrial ventures directly, the most outstanding example being the Mysore Iron Works and the Krishnaraja Sagara Dam; (iii) In 1926 the present period of 'stabilisation and progress' began, the policy being for the State to encourage, guide and coordinate private enterprise, but to withdraw gradually from direct participation. On the whole this seems the best policy for a State which must adapt itself to its surroundings rather than influence its surroundings for its own benefit. State guidance can stimulate and assist private enterprise and secure dovetailing and external economics which would not otherwise accrue, whilst the worst dangers of planning and State management are avoided. The policy pursued has found an admirable exponent in Mr. Balakrishna, whose attempt to apply economic principles to the practical case of Mysore has resulted in an enlightening analysis. It is to be hoped both that he will pursue his enquiries further, and that his example will stimulate other Indian economists to give us similar studies of other Indian States.

VERA ANSTEY.

Modern Banking in India. By S. K. MURANJAN. Bombay New Book Co. 1940. viii + 422 pp. Rs. 7-8-0.

The Indian banking system consists of a small number of institutions (such as the Presidency Banks, now united in the Imperial Bank) dating from the early 19th century; a few Indian Joint Stock Banks (such as the Allahabad Bank, 1865, and the Punjab Bank, 1895) established in the latter part of the 19th century; a relatively large number of Joint Stock Banks, including the Reserve Bank, which are 20th century products; and a mass of small indigenous banks, not yet fully integrated into the system, some of which are of ancient origin, as family or caste businesses. Mr. Muranjan is chiefly concerned with 20th century developments and problems, but provides sufficient history to show that these are essentially related to the (very) recent modernization and industrialization of India, having remarkably little in common with 19th century developments and problems. *Modern Banking in India* is mainly descriptive, and gives a useful account not only of the main Joint Stock Banks, including the Imperial and Reserve Banks, the structure of their assets and liabilities, their main functions and weaknesses, but also of related institutions—such as the Stock Exchanges, the Bombay Bullion Exchange and Insurance Companies—and of legislation and Government policy affecting banking. The most interesting and illuminating chapter is that on "The Structure of Interest-Rates", in which it is pointed out that in India, in "arresting contrast to conditions obtaining in other countries", short rates are normally above long rates. According to Mr. Muranjan, this is because agriculture provides the largest demand for short-term funds, and foreign capital flows readily into long but not into short term investment. The employment of funds in agriculture suffers from a high risk of default, whilst though loans are nominally short-term, in fact the proportion of renewals is, by custom, extremely high.

Mr. Muranjan's book can be heartily recommended to all who want a clear, systematic and reasonably concise exposition of India's banking systems and problems.

VERA ANSTEY.

German Economy, 1870–1940. By GUSTAV STOLPER. George Allen & Unwin, Ltd. 1940. xviii + 295 pp. 7s. 6d.

The purpose of this book is to provide an outline history from the founding of the Reich to the present day. Those who hope to find in it a book of reference for a detailed description of particular periods or aspects of German economic development will be disappointed by the lightness of its treatment; when it is regarded, however, not as a textbook of history but as the introductory sketch of the economic history of a " far-away country " it is both readable and illuminating.

The author is concerned, above all, to emphasize the continuity in the underlying trends of German economic development. Starting with a description of Bismarckian patriarchalism, of State control in wartime, of the " municipal socialism " of the pre-1914 and even more of the post-1918 era, the former editor of *Der Deutsche Volkswirt* proceeds to demonstrate the ever increasing tendencies towards State capitalism which finally culminated in the Third Reich. As distinct from the Western countries, he points out, Liberalism never succeeded in weaving its principles into the social and economic texture of Germany, apart from the temporary influences symbolised in her adherence to the gold standard in 1873 and the short-lived era of free trade in the 60's of the last century. State encouragement of and participation in industry, transport and banking, State sanction of cartels, the compulsory formation of price and output controls, tariffs, quotas and subsidies and finally an elaborate system of social security were all characteristic features of an economic life which under the Nazis was straight-jacketed into complete totalitarianism. " The Nazis hardly introduced a single element not preconceived or practised before. They could build on a foundation prepared for them by their predecessors. The totalitarian system of the Nazis is merely the climax of the expansionist tendencies and responsibilities of governmental power over the destinies of the German people."

One cannot help, however, being slightly uncomfortable about the straight-line evolution implicit in this account. Beneath the formal increase in the interventionist powers of the State in the economic and social processes of the country there was surely concealed a greatly changing balance of power of the various social pressure groups. Mr. Stolper himself points this out in relation to wage policies under the Weimar Republic. " The fiction was kept up that the official wage decisions should amount to what the parties would have freely agreed to by reason and fairness. But it is obvious that the criteria of ' reason and fairness ' could not be defined otherwise than by the actual economic doctrines and intentions of the government of the day. This applied to the extent of wage increases in the prosperity period as well as to the wage reductions in the subsequent deflation." These social struggles and shifts of power must be borne in mind if one is to get the right perspective of the developments in question.

From the present point of view, the account of the war economics of 1914–1918 provides a number of illuminating sidelights. It is shown that Germany had planned for the war only in the financial sphere, and that even here her plans were merely designed to prevent the public from grasping the essentially inflationary nature of the measures to be adopted. It took the authorities a long time to evolve a satisfactory system of rationing and priorities, and there was much waste and inefficiency (exemplified in the running down of stocks and in such events as the "hog massacre") before it was reasonably complete. The fact that Germany lost the last war was not least due to the over-great reliance placed on the "German genius for improvisation". A study of the causes of her failure would be amply repaid even at the present time.

T. PRAGER.

The Establishment of Constitutional Government in Newfoundland, 1783–1832. A Study of Retarded Colonisation. A. H. MCLINTOCK. Royal Empire Society Imperial Studies, No. 17. Longmans. 1941. xv + 246 pp. 15s.

This book succeeds, in spite of a very detailed treatment of the material, in keeping the main issues clear-cut and vivid. The colonisation of Newfoundland is made, as a case-history, to illustrate the worst side of mercantilism as well as the largely economic causes of its supersession.

Here we see the possibility of turning Newfoundland into a thriving colony sacrificed to the greed of the merchants of Poole and Dartmouth, who, in order to prevent the growth of a permanent population of rival fishermen in the island, went to the extent of using all their influence to prevent even bread and flour, though in British ships, from being imported from America to the woefully underfed population. We see, too, the part this played in estranging the New England fishermen from the Mother Country on the eve of the American War of Independence; the privileges in the island given by the British Government to France for diplomatic reasons, though this caused considerable hardship to the islanders; the fundamental unwillingness of the British Admiralty to see Newfoundland develop into a colony, because of the theory that the purpose of Newfoundland was to provide Britain with seamen, who could apparently be raised only by annual voyages and not by permanent residence abroad.

The discouragement of colonisation even went so far as causing houses to be pulled down on the Governor's orders, because these, though built with previous permission, interfered with the fishery at St. John's through being on the waterfront.

Dr. McLintock shows, how in spite of all these deterrents, a large, if necessarily unruly, population sprang up and Newfoundland was eventually granted a local legislature in 1832, as a result of a movement both in the island and in England, where it was obviously closely connected with the movement for the great Reform Bill, itself one of the most striking symptoms of the end of the old order of things. The factors which had favoured the great growth of population were, first, the seal-fishing industry, which involved a winter residence in the island; second, the Revolutionary and Napoleonic Wars, which proved a godsend to the island by making voyages from the West coast of England very dangerous and by removing the French rivalry; third, the fact that, while some Governors carried out the policy of the British Government and did all they could to discourage colonisation, others connived at, or fostered it, until it became too unmistakable for anyone to ignore or suppress.

Dr. McLintock apparently regards Newfoundland as being unique in having been regarded as a boat, and being under the discipline of one. This, of course, is by no means the case, as the same characteristic was found much later in British settlements in West Africa, and earlier, to a considerable extent, in the Cape of Good Hope, when first settled by the Dutch East India Company. But this scarcely detracts from the value of the book.

GWEN NEUENDORFF.

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War Demand, Entrepreneurship and the Distributive Problem

By W. H. Hutt

In this article I discuss certain aspects of the direction of the British war effort. I have observed this effort, from the security of Cape Town, through the printed word. Whether the distance has aided or clouded my judgment, I cannot say. My thesis is that the restrictionist mentality of controllers and officials in Great Britain has, in spite of lessons of the bitterest experience, continued to militate against an understanding of the main factor in war economics, namely, the immense shift in demand from production for peace to production for war. (1) It has not been fully understood that this demand shift necessitates, for a self-consistent policy, a parallel transfer in purchasing power from private hands to the State. (2) Although an attempt has been made by direct restraint of non-war production, and by the commandeering of resources, to rectify the results of under-taxation plus insufficient State borrowing, the form of the restraints imposed has led to the essential rôle of entrepreneurship being misunderstood. (3) The necessity to rectify independently the distributive injustices brought about by the basic demand transfer has not been recognised, and this has led to further confusion respecting the rôle of the entrepreneur.

War requires State planning in the sense that, in formulating demand for the war effort, the amount of that demand and the choice of immediate ends within it (e.g., between guns and tanks and aeroplanes) shall be rationally determined. The implication is of course that, owing to these immediate ends being concerned in the pursuit of a unified ultimate end (i.e., the winning of the war), the appropriate administrative pyramid (through which knowledge of productive potentialities is gathered and demand communicated) is a centralised one. That is, under war conditions, the channels of information concerning productive potentialities should be as far as possible centralised and the required data communicated in summary, *and in price terms*, to one focal point ; and the channels of information respecting the requirements for war must radiate from that same focal point to appropriate centres (private firms or State undertakings) in the form of demand for specific war products.

The first decision I have mentioned, namely, the determination of the amount of State demand, is the key decision. All other war decisions must be subordinate to it. That decision and that decision alone should determine the amount of taxation and borrowing. If it does not, it leads inevitably to a host of complications. Foremost among the complications, the failure to tax adequately and/or borrow adequately makes essential the commandeering of property and labour as a means of preventing the production of non-essentials (i.e., as a clumsy and embarrassing alternative to taxation and compulsory borrowing) ; and rationing, and many other " controls " intended to supplement demand and supply forces (such as the establishment of " priorities " in the consumption of materials) are explicable on the same grounds. It is in the light of these fundamental considerations that the following discussion has been planned.

There is little doubt that the historians of the future will say that non-war consumption in Great Britain was allowed to remain unduly high. Indeed, I expect the word " unduly " will seem surprisingly mild. For if the trusted British leaders had recognised the full implications of a gigantic shift in the type of production, the community could hardly have been tacitly encouraged (by the failure to tax or borrow current incomes and the failure to freeze savings in all forms) to demand the flow of peace-time goods and services which the advertisements of 1939 and 1940 showed were available and in course of production. Why should the community have been allowed unwittingly to play tug-of-war with itself ? It seems that the British Government and their chief critics did not at first understand clearly enough the fact that war implies a vast transfer within the community's demand. Hence they were quite unable to explain to the public (the wealthy as well as other classes) that huge sacrifices of luxuries and conventional necessities were essential for the purchase of the war effort.

Whilst the Nazis were emphasising that income and consumption are, in time of war, unrelated qualities; whilst they were explaining that consumption must be limited by the "distributable social product", i.e., what is left after the full requirements of the military machine have been met,[1] the British authorities had not conceived of, let alone enunciated, any parallel principle.

We can see how obscure the question of demand transference originally appeared in influential circles by considering the attitude shown towards "the Keynes plan". This plan involved little more than a mild frustration of the power to demand non-war goods—merely a gesture to the real principle. Yet it was for long regarded as a drastic, almost revolutionary, suggestion. As Mr. Horsefield pointed out quite early, the plan was for that very reason dangerous. It encouraged "the hope that only a slight extra effort would suffice to see them through".[2] And although the Purchase Tax was wisely conceived it was obviously only playing with the problem of diverting demand. That is all very well, it may be said, but the public could never have been persuaded to make the full sacrifice required for a complete diversion of demand. I do not believe it. When Mr. Churchill promised the people "toil and tears, blood and sweat", they resolutely faced that prospect. Powerful and confident economic leadership would have had equally impressive results. I admit, as Mr. Einzig pointed out, that "there are limits beyond which the restriction of luxury consumption would damage the spirit of the civilian population as well as that of the fighting forces".[3] But propaganda could have been appropriately designed if a lead had been forthcoming; and the urgency of renouncing non-war spending could have been tellingly communicated. Hence, the rationing of materials for non-war products, the rationing of the products themselves, and the limitation of non-war imports, together with price-control, should have been regarded as *additional safeguards* against the wrong use of resources and not as substitutes for heavy taxation and compulsory saving.[4]

By the end of 1940, the authorities had come to understand a little about this aspect of total war. They realised that it implied an immense reformulation of demand and so a drastic change in the type of utilisation of resources. They had "roughly" learned "the lesson that non-essential manufacturers must not be allowed to use up essential materials or needless imports . . ."; it was "dawning" on them "that factories and machine tools must be brought in to do war work wherever possible . . ."; "but the lesson that labour must be released for training in step with the economising of materials and the enlistment of plant . . ." had "scarcely been seen"[1]. It was this blindness which was largely responsible for the failure to make more strenuous an effort to overcome the resistance to "dilution" and large-scale training schemes. It was this blindness which caused employed workers to be thought of, until late in the war, as unavailable (except for the fighting forces). But the reason why employed workers could not be directly recruited for war work was simply that taxation and State borrowing had been inadequate to drive them from their peace-time employments, and inadequate to permit their being bid away. Even when crude attempts were made to rectify the situation by methods like the Limitation of Supplies Order, there was the psychological obstacle produced by three decades of "the dole". When the restraint of non-war consumption led to the displacement of labour—and this should have been its deliberate and intended consequence—it was at first regarded as an evil which had to be put right. In spite of total war demanding unlimited man-power, Mr. Bevin was so soaked in the traditional ideas that, towards the end of 1940, he was actually trying to prevent successful labour economies in non-war industries, because they were causing unemployment.

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[1] H. W. Singer, "German Economic Periodicals," *Economic Journal*, December, 1940.

[2] J. K. Horsefield, *The Real Cost of the War*, p. 72.

[3] P. Einzig, *Economic Warfare*, p. 53.

[4] Rationing is necessary in war partly for reasons connected with distributive justice. But that is quite a separate point.

The chief source of this confusion was, it seems to me, the failure of the authorities to realise the reasons and sanctions for the system of basing incomes upon the value of services rendered by personal efforts and by property in physical resources. They simply realised that to allow war demand to determine incomes would in some cases mean intolerable losses to those whose property or personal powers were specialised to peace-time pursuits and fortuitous gains for those whose resources were suitable for war production. Perceiving these distributive injustices, the authorities apparently assumed that full utilisation (i.e., unrestrained production determined by war demand) somehow involved disadvantages—prohibitive disadvantages. And this was, I believe, the chief reason for the inability to make good use of entrepreneurial arrangements. Entrepreneurship was so cruelly efficient that its distributive repercussions would have meant loss of morale and political difficulties.

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[1] *The Economist*, 16th November, 1940.

Let us consider this distributive issue further. When war begins, there is a revolutionary revaluation of different types of resources within categories as different as natural resources, plant and machinery, personal powers and skills; and so there are accompanying serious changes in the incomes derived from ownership of these things. It follows that attempts to perpetuate or protect the pre-war distributive situation by means of the maintenance of values may bring about the most serious restraints of productive power. But this is what the British have been trying to do, without really understanding it. In the war of 1914–18 the problem was much less urgent, and it was possible to muddle through in blindness to the wastes involved. The technique of warfare did not then call for that striking change in the content of productivity which is demanded for the total war of this decade.[1] Helped by a measure of inflation, the distributive system could stand the strain over the 1914–18 period, and the sacrifice of productive efficiency was not conspicuous. How different it has been in this war!

One of the ways in which the sacrifice of productive power has been most apparent is in respect of the utilisation of the available labour supply. Although faced with the problems of vast occupational and inter-district transferences, owing to the substitution of wartime for peacetime demands, and vast changes therefore in the valuation of different kinds of skills and specialist efforts, the authorities failed, it seems, to realise the urgent necessity of enabling these new valuations to be expressed in price form. That is, they were unable to see that the situation cried out for wage-rates to be left free and accompanied, when necessary, by rectifying compensations in the interests of justice and industrial harmony. Mr. Bevin, on taking office as Minister of Labour, thought that the pre-war machinery for wage-fixation, together with the new National Arbitration Tribunal, was appropriate. Unfortunately, the chief critics of this system confused the issue by arguing against its retention, that " labour resources must be re-distributed in accordance with the national interest and not with money demand ". Differential wage-rates should be dropped, they contended, and " a limited number of wage categories supplemented by family allowances " adopted. Well, if there had been adequate taxation and State borrowing, money demand *would* have represented the national interest. But let us concentrate on the concrete issue. The controllers were confronted with two problems : (*a*) the distributive injustices caused by the multiplication of skill and the entry of unprivileged labour into protected occupations ; (*b*) the distributive injustices due to the radical demand changes of war. But all they understood was the immediate dilemma that when workers were moved from one type of work to another type of greater urgency, their wage-rates were often lower, not higher. Then, I gather, dumbfounded at the situation which their restrictionist habits of mind prevented them from analysing, they and some of their equally endoctrinated critics seem to have been driven to the conclusion that differential wage-rates were the obstacle. " A fig for values and wage-rates ! " they seem to have cried, " let us use compulsion without reference to values. It is so much more logical." And *The New Statesman* sympathetically and helpfully encouraged them in this belief, by arguing : " There ought to be uniformity of working conditions as well as wage-rates over wide areas ; so that men could be sent from one factory to another without any question of changes in their conditions of employment. The problem of moving men from one district to another would be simplified if there were uniformity of conditions as well as wage-rates in each district."[1] *The New Statesman* critic appears to have been unable to separate in his mind the ideas of incomes and wage-rates. But was that not the essential intellectual effort demanded ? It is my belief that the situation actually required just the opposite of a fixed price of labour. Wage-rates, i.e., the valuation of different types of personal services, ought to have been left absolutely free. It was *incomes* which should have been determined by authority; and *incomes* should have been recognised as being completely independent of wage-rates.

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[1] As Mr. Paul Einzig has reminded us, in the last war "to the very last day there was nothing to prevent any manufacturer from using labour and raw materials for the production of luxuries. . . . Producers were at liberty to employ workmen unfit for military service for any purpose they chose. They were at liberty to use up raw materials . . ." *op cit.* (p. 33). A war of that kind is so far from being total war that experience from it may be utterly misleading.

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[1] *The New Statesman*, " Economic Notes," February 1st, 1941.

Now Mr. Horsefield, possibly impressed with the error of allowing war values to determine war incomes, also appears to give his support to the idea that in wartime the pricing of labour is less necessary or even futile. He says that, under war conditions, the process under which the preferences of the public secure the application of labour to the most appropriate channels cannot be relied upon. "There is not, as there is in peacetime, an infinitely graduated scale of preferences, influencing the public to want this rather than that, and to increase or decrease their purchases of each according as its cost alters. We are not, that is to say, able to rely upon prices to sort out skill into the directions where it is most needed. An aircraft factory and a contractor building a barracks may both need skilled carpenters; we shall not know any better who needs them more if they try to outbid each other in wage increases."[1] But why not? The relative urgencies of aircraft factories and barracks, faced with limited resources for their provision (*inter alia*, skilled carpenters), can only be envisaged in terms of values; and values can receive objective expression, and so be of administrative significance under complex co-operation, only when expressed in prices.

If Mr. Horsefield means that the State is, so to speak, bidding against itself; if he means, in other words, that the process of choosing between aircraft factories or barracks is itself the process of determining the relative values of the resources required, I agree with him. And when the range of operations relevant to the choice of means is small enough, when it is capable of clear assimilation by the directing authority, objective valuation as prices is not essential. Thus, *within* a factory, although there is theoretically a kind of bidding between departments for the given total supply of labour engaged by the firm, no actual tendering[2] by departments usually takes place. The expression of demand and the response of supply are identical and determined by the head of the firm in the light of the opinions and claims of the departments. Hence, once a given labour supply has been engaged by the firm, the operations leading to its detailed utilisation do not fall within the process of co-operation through market exchange. That is because the relative values of labour in the different departments can easily be envisaged (after the consideration of departmental claims) by the management. The head of the firm can therefore arrange the allocation of labour, in the absence of an internal market indication, so that its productivity is equal in each department, i.e., so that no worker can be profitably moved from one department to another. Similarly, *materials* can be rationally allocated between departments. In each case, however, the process of valuation still takes place. Values are as relevant as ever.

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[1] J. K. Horsefield, *op. cit.*, pp. 93 and 94.

[2] It could be claimed, however, that there is *virtual* tendering, for each department has to make out a case and promise results for the amount of labour allocated to it.

But when the complex rival means which make up the war effort have to be co-ordinated, although the expression of demand and ultimate discretion in the direction of response to that demand emanate from a single authority, the two channels of initiative must be separated in practice, and for rational decision-making to be possible, both must be guided by the price mechanism. A central body must define the innumerable related productive objectives. And it must, *on an assumption of* the relative costs, declare, *inter alia*, the number and capacity of aircraft factories and the number and capacity of barracks required. Mr. Einzig, like many others, talks of determining the " order or importance of various branches of production ".[1] But the high command and production executive cannot do this, as some seem to imagine, in isolation from the price mechanism. And there are few short cuts to the determination of the relevant costs. Obviously the controlling authorities themselves cannot grasp the relative efficiency of different combinations of the various types of resources (including labour) for the most efficient achievement of those objectives.[2] The labour and materials are required for countless competing purposes within the vast unity of a defined strategy.[1] The only rational method of allocating such resources among the innumerable uses open to them is to allow some process which actually *is*, or else *corresponds to*, entrepreneurship in bidding for them. In other words, firms, or officials with the same sort of functions and responsibilities, must submit tenders, based on their estimates of the supplies of labour and materials, for barracks and aircraft factories. Unless this method is in some way followed, the scope for hidden waste (i.e. uneconomic utilisation of resources) must be enormous. " All successful administration," said Wicksteed, " . . . consists of the purposeful selection between alternative applications of resources ; and the ultimate value or significance of success depends upon the nature of the objects at which the administration aims. . . . The idea of ' worth ' enters, as the regulating and dominating principle, into every sort of administration."[2] And "worth" cannot be reflected otherwise than in prices when the "alternative applications of resources " are as diverse as they are in total war.

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[1] P. Einzig, *op. cit.*, p. 44.

[2] It is on this point that " Populus ", in his interesting critique, *My Dear Churchill*, fails, as I see it, to face the real problems. He has a perfect conception of the basic fact of competing forms of war production (e.g., pp. 34–5), but appears to think that the production executive can solve the problems *in vacuo.* Surely it is the attempt to do so which has led to that very failure which he deplores. To talk of " holding the balance aright between conflicting claims " (p. 36) is not to indicate any principle. What measures of claims can be at the disposal of " planning departments " ? " Populus," addressing Mr. Bevin, says : " You can only know what the other departments choose to tell you, and that will be only what it suits them that you shall know. It will be beyond your power to check what they say, or to form, on a basis of real evidence, an independent judgment of your own." Of course. But " Populus's " only remedy is a strong department and a " general authority to over-ride departmental obstacles ". Just how rational co-ordination can be effectively achieved by an over-riding authority in the absence of the crucial price knowledge, we are not told.

I do not suggest, let it be noted, that the profits made or the losses incurred by firms to which entrepreneurship is entrusted should be retained for their shareholders or borne by their shareholders. I have argued that war values should *not* determine income distribution. I am concerned with the criteria of relative urgency, and the scarcity factor is as paramount a criterion in war as in peace. It is a factor which can receive rational representation only in price terms, and which can be applied only in profit-loss terms. In short, its utilisation is dependent upon the preservation of the entrepreneurial and pricing system.

The proper way of tackling the labour problem in wartime would therefore be to introduce a system of compensations which makes incomes independent of wage-rates whilst leaving the latter free for market determination, and recognising that such a system involves the renunciation of the labourer's right to choose employments. In war, the labourer obtains his income from the State whose orders he must for that reason obey. And the State must, in effect, take the payment for his efforts as they are freely priced on the markets and pay him a " just " income. In *this* sense, conscription of labour is envisaged. But the pricing of the worker's services remains as essential as ever. For example, one of the difficulties encountered in Britain has been the tendency on the part of firms to retain unnecessarily the services of key-workers. The highly skilled minority who are required for setting up machinery remain on the pay-roll of one firm and are given relatively unskilled work, in order to secure, for that firm, advantages in contracting.[1] But in time of war, the objective of full productivity causes the services of such workers to be very highly valued indeed ; and if firms had to pay the market price they would find it unprofitable to employ them except upon work of genuine relative urgency. The failure to make the maximum use of scarce skill has been due, firstly and directly, to the rigidity of the wage-system, itself a product of trade-union traditions ; and secondly and indirectly, to the failure to realise that a high price of skilled labour need not mean the receipt of correspondingly high incomes on the part of the workers providing it. But when, after the war broke out, the bidding for skilled labour began to result in its being attracted from firm to firm, the authorities at once stepped in and said in effect :

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[1] In the case of certain scarce materials whose total quantity and whereabouts and rate of production are known with sufficient accuracy, an appropriate priority may be allocated by the central authority *with the order*—on the assumption that the other materials (as factors in the equation) are relatively unimportant. In such cases the valuation is direct. But the problem is practically never as simple as this.

[2] *Common Sense of Political Economy*, Vol. I, p. 14.

> No. That is " enticing ", " poaching ". It must stop. We must not allow tanks to bid against guns, and guns against destroyers. We must assume that the existing allocation of skilled labour is just right. And if any alteration is necessary, we must determine it through Labour Supply Inspectors, without reference to any expression of relative urgency on the part of those to whom we have communicated our demands for tanks and guns and destroyers.[2]

This sort of reasoning appears to be implicit in the notion of the " wages ceiling "—the assumption that no labour can be *worth* more than a given level or should be valued at more in the accounts of firms. An *income* ceiling would have had more to be said for it.

I am not overlooking the gigantic nature of the task which would have been involved in the introduction of so sensitive and effective a system for labour re-allocation as a free labour market. The psychological defects (or rather, difficulties) of the system arise from its very perfection as a mobility-promoting agency. It involves the confession that we are paying certain types of skilled workers much less than the market value of services rendered in wartime. Unfortunately, we cannot ignore the difficulties. Quite apart from the huge scope for political mischief-making—the possibility of subtle suggestion that it is all a scheme for exploiting labour and feathering the capitalist's nest—the re-direction of man-power involves "an enormous complex of personal abilities, preferences and prejudices . . . it necessitates over-ruling the habits and traditions of employers and employees alike. It is in such matters as this that the efficiency of the totalitarian system seems most striking ; for dictators need pay no heed to the human element. But actually the elasticity of the democratic system, its preservation of the importance of the individual, can go far to outweigh this advantage ; because in a democracy the priceless asset of personal initiative can be retained and indeed encouraged."[1] But it is the possibility of the free valuation of labour which is the greatest potential source of democratic efficiency ; and a system of income stabilisation for the maintenance of distributive justice could alone have ministered to and overcome the very real human obstacles thereby encountered. The right approach would have forced consideration of arrangements for such stabilisation into practical discussion.

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[1] " Populus " refers to the practice as the " hoarding of skilled labour " (*op. cit.*, p. 47). But his remedy also seems to be the elimination of entrepreneurship, i.e., the control of prices, the " taking over " of firms by the State, and the abolition of all real pricing.

[2] There were complaints about the poaching of skilled labour in Nazi Germany at the outbreak of the war. (H. W. Singer, *loc. cit.*)

Workers remunerated under an income-stabilisation scheme can, of course, no longer be regarded as self-directive as between firms and occupations. There will be no personal advantage in a worker's movement from one job to another of greater social urgency. That is the implication of labour conscription. The worker becomes the employee of the State whose orders he must obey. Is that, perhaps, Mr. Horsefield's point about the skilled carpenters he considers ? But materials are not self-directive and yet we still price them. He will agree, I am sure, that the position is that the pecuniary incentives to mobility and efficiency will cease to be individual when incomes are made independent of the value of services rendered. Bonuses to re-create the immediate efficiency-stimulus of piece-rates can modify the independent incomes guaranteed, but the allocation of labour must be directed by authority. In time of war, individual incentives other than the merely pecuniary can be relied upon more than in peace; and given the extent of national unity in Britain, both decision-makers and workers may be assumed to be actuated by the impelling incentive to winning the war. As defeat would mean utter disaster for all, policy should be based on the understanding that all are in earnest in seeking that single collective end. Unless this non-pecuniary motivation can be relied upon, distributive chaos is inevitable.

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[1] J. K. Horsefield, *op. cit.*, p. 90.

I do not suggest that non-pecuniary motives can be exclusively relied upon. But monetary incentives to efficiency may be super-imposed upon any acceptable system of distribution which is adopted. For instance, differential pay according to rank in the Army is far from being merely distribution according to status. Whilst the reward of promotion is not wholly a monetary incentive, the pecuniary aspect is by no means absent. But the general level of Army pay is based upon a notion of reasonableness. If the incomes of soldiers were determined by value, and if personal net advantageousness were allowed to influence employment preference, military pay would have to be much higher than that in civilian employments. Sir Richard Acland's plea that no company director should be allowed to receive a larger salary than a field marshal is really an appeal for a new principle of distributive justice under total war conditions.

But, it may be asked, if labour ceases to be self-directive under the system of compensation, and if the profits or losses of firms do not determine the receipts of shareholders, has not entrepreneurship in the usual sense been superseded completely? Does not conscription of capital and labour supplant the entrepreneur function? The answer is that the entrepreneur *mechanism* can be fully retained side by side with income-stabilisation. Although the motivation is different, the profit-loss index can remain as a guide to the effective response to war demands. But as high profits will not benefit the owners of a firm, and as low profits will not be to their detriment, the shareholders can hardly be the effective source of entrepreneurship. Whilst resort can be had to some incentive-remuneration for the management, the enterprise must cease to be under the ultimate command of shareholders. In a sense, managing directors and managers must become State servants under a system of conscription of property.[1]

In the ideal war economy, therefore, the State must act as custodian for the shareholders, taking over all their rights and functions in the meantime. But shareholders do not interfere with the actual management of firms any more than electors interfere with governments. It follows that, whilst the State must be in a position to give direct and authoritative orders to managements, it should seldom fetter their discretion. That is, in general, apart from its prevention of the withholding of capacity, the sole active and continuous function of the State in respect of war production should be the formulation of demand. The managements of firms are more likely to be in a position to understand the local supply situation in respect of labour, materials, housing, transport, etc., than any central administration; that is, of course, provided that the State does its job of gathering and making known the main facts concerning national supplies. If the supply situation as a whole can be envisaged, the managements of firms will understand the cost significance of the relevant facts much better than would be possible for any centralised administration. All the war production problems must be solved in the light of detailed and local technicalities, the knowledge of which cannot be effectively centralised.

It seems, then, that there was available for the service of the State, in a wholehearted war effort, entrepreneurial machinery which could have been used to arrange the most rapid and sensitive response to the drastic demand shifts required. But the authorities and their chief critics were apparently more aware of the vested interests side than they were of the directive function of the entrepreneurial system. They appear to have assumed that the solution to the confusion which inevitably arose could be solved by the suppression of entrepreneurship instead of by its utilisation. So long as those units of delegated and socially limited discretion[1] which we call " firms " are regarded as barriers, instead of as part of the institutional framework required for promoting mobility of plant and labour among the competing ends contributing to the unified end of war, a rationally co-ordinated effort must be unattainable. And the failure to recognise and overcome the distributive hindrance has, I suggest, been the real source of error throughout.

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[1] Mr. E. F. M. Durbin has argued that the shareholder to-day is a "functionless pensioner". "Property in industrial capital," he says, "has wholly lost the social functions supposed to be grounded in it" (*The Politics of Democratic Socialism*, pp. 128 and 132). Whilst I do not agree with this assertion and Mr. Durbin's inferences from it, whilst I believe that in normal times the great problem is that of finding ways of breaking up the lines of entrepreneurial authority, instead of concentrating such power in the hands of the State, I agree that, for the period of the war, there is little to lose and much to gain from the State temporarily superseding shareholders under an income stabilisation system.

The great advantage which the Nazis possessed was that they had less need to study the " human factor " ; in other words, they could worry less about vested interests. Even so, they seem to have had a more comprehensive system of compensation than the British. In the authoritarian method of overcoming resistance to full utilisation, in compulsory concentration to rectify monopolistic multiplication of plants and diffusion of industry,[2] and in standardisation, the Nazis were much more successful, therefore. But how far they exploited entrepreneurial machinery more effectively than the British, it is impossible yet to tell. An unofficial German periodical was allowed to argue, in March, 1940, against the compulsory sharing of markets between wholesale traders, that " it is not possible to replace a system built up in the course of decades through personal entrepreneurial achievements by a schematically constructed system."[3] But this may well have been the plea of a vested interest, against a privately unprofitable concentration. There seem to have been marked divergencies between precept and practice in Nazi Germany. Thus, whilst the use of " price offered as an inducement to increased efficiency"[4] was officially renounced, increasing resort was had to piece-rate remuneration. And when things were felt to be relatively scarce, their maximum prices were raised, surely to supply a motive for the diversion of resources to their production. Everything considered, it is safer to assume that the failure to make full use of the enterpreneurial mechanism was a source of economic weakness in the German as well as in the British system. But a far-seeing economic direction in Britain, which could have envisaged and found a solution to the distributive problem, would have been able to tap a huge source of efficiency and productive power. Drastic and direct authoritarian action to bring all potential and existing capacity into full operation would have been so much easier and so much more rationally planned had the function of entrepreneurship and the relevance of the pricing mechanism been understood.

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[1] The discretion of firms is, of course, limited by all those forces expressed through the price mechanism.

[2] See my *Theory of Idle Resources*, Chapter VII, for an explanation of the monopolistic multiplication of plant.

[3] H. W. Singer, " The German War Economy," *Economic Journal*, April, 1941, p. 22.

[4] H. W. Singer, *op. cit.* (1940), p. 541.

Let us consider, in this connection, a typical example of the chaos apparently produced by the failure to understand the rôle of entrepreneurship and the price mechanism. One gathers that orders have been given to factories (and even factories constructed) in districts in which the labour supply has been lacking, in which transport facilities have been lacking, and in which the minimum housing requirements for the workers have been missing! As a mere student of administration I am led to wonder how that could possibly have happened. I cannot help asking: Is it that once the controllers have ceased to think in terms of profit-maximisation, they have been unable to distinguish any principle of co-ordination? Is it that they have lost all conception of production as a response to social or State needs, through habits formed over years of profit-making from scarcity? Whatever the answer to these questions, it is clear that *something* prevented the development of the necessary co-ordination machinery for enabling the required complex response.

Perhaps the technical and human management difficulties encountered during the war would have beaten the wisest personnel. In fairness to the controllers I must emphasise this. It is very easy to criticise, especially after the event. But the controllers certainly appear to have acquired the blind bureaucratic attitude. Am I wide of the mark in feeling that the type of mind which has been mainly responsible for this productive disorder in Britain is that which says, in effect, something like the following?

> We cannot allow entrepreneurs to build their factories "just where they like". That would mean *laissez faire*. Admittedly they know much more about their trades and the appropriate resources and markets than we can; and they have every motive to build factories where production costs are lowest, given the probable demand (which we alone can make known to them). But to produce output at the greatest economy (when the economy has to be passed on) destroys profits in time

of peace, and now, in time of war, it destroys the tidiness of the diagrams on our walls. We realise that independent contractors take into account things like available and potential labour supply, transport facilities, housing, accessibility to materials, and so forth. But we cannot quite see where that sort of thing leads ; and we know that to leave important decisions to contractors is to allow *laissez faire ;* and *laissez faire* is wrong. Everybody says that. Besides, as controllers we have the authority. Doesn't that mean that *we* must decide the general scheme of production ? So we shall erect factories where *we* like, in accordance with a comprehensive and beautifully neat paper scheme. Then, if we find things go wrong, if we find that labour, or skill, or housing, or transport, or materials do not happen to be available, we can easily arrange for them to be made available sooner or later. And so we shall place contracts where *we* like, with contractors who are known to us. Why should we worry about those contractors who feel that lobbying or petitioning us is undignified, indefensible or dishonest ? Of course, we *could* get into touch with them through the market and by means of the organisation of a widely decentralised tendering system. But markets, and tendering, and bidding are of the essence of *laissez faire*. And everybody knows that *laissez faire* is bad.[1] The custom of under-cutting is the obstacle which our "planning" has to overcome. Those who can supply more cheaply than our contractors make us look rather silly ; and they smash the planned orderliness of our scheme. They are saboteurs. We must freeze them out or seize their plant. We have this great source of efficiency, as against the antiquated *laissez faire* system, that we need not worry about costs. Tidiness on paper is much more important than costs. For one thing, it is comprehensible to us. We find it so much easier to understand than the terrifying complexity of the relations between firms. And our problems are greatly simplified if we deal only with those representatives of vested interests who are our friends or known to us.

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[1] " Small and middle-sized firms have got the impression that, if they want contracts, they had better employ an agent in London, or ' contact ' with somebody who is on the ground floor, and that they stand little chance of getting their works continuously employed on Government orders unless they attach themselves permanently to one of the recognised contractors or pay a rake-off, by way of commission, to somebody who is in the know " (" Populus," *op. cit.*, p. 45).

This is an exposure, but by no means a travesty of the typical " planning " mentality. It is true that the blunders which that mentality have led to during the war have all been gradually patched up ; but at what economic sacrifice nobody can tell. We simply know that many dislocations and obvious muddles could not be hidden from the critics ; and that the ignoring of entrepreneurial machinery has apparently led to such anomalies as factories waiting idly, whilst others have been in process of construction with identical equipment to fulfil orders already placed.

Of course, in time of war there are two great objections to the tender system. Firstly, it requires time for its efficient working ; secondly, the traditions of restrictionism have led to formal and tacit arrangements under which contractors tender collusively, in order to secure the largest possible profits, and under which intermediaries may be merely parasitic. But surely a grasp of these realities on the part of the Ministry of Supply would have meant that such difficulties could be overcome. Both could have been tackled by a drastic de-centralisation of authority. This would have put the supply departments into intimate touch with all sources of production whether large or small. The results of a war production census (of equipment and skill) would have been invaluable in this connection.

Consider the time factor. With de-centralised control, the time required for making tenders need not represent anything more than the time required for the careful weighing up of the relative advantages of committing valuable and scarce equipment to one kind of use as opposed to another. It is always easy to obtain speed at the expense of the sacrifices inseparable from blind haste. Is *that* what the anti-tender advocates want ? I do not think that anyone would argue that, under the authoritarian control of production, costing would be unnecessary, and that capital commitments could be entered into without careful calculation. But costing and like calculations take time, just as the tender system does. Hence there is no obvious time economy inherent in the supersession of tendering under authoritarian control. Properly regarded, the process of tendering and entrepreneurial responsibility is merely the collection and objective representation of relative costs. This is only another way of saying that tendering enables the determination of the relative efficiencies (in relation to war pursuits) of different ways of combining specialised productive power. It follows that the abolition of the tender system cannot, *in itself*, effect any saving of time.

It must be admitted that tenders made rapidly in times of emergency may often be much higher than those made after due consideration of details, for when the data are uncertain, entrepreneurs must protect themselves. But the high figures in such cases simply prove the extent to which there is danger of resources being used wastefully when haste is unavoidable. The risk is not one which can normally be efficiently shouldered privately.[1] If the entrepreneur cannot rapidly grasp the details of a complex combination of productive resources in a novel and urgently demanded undertaking ; if, for example, he is unable to tell, without time-consuming calculations, the relative quantities of different kinds of labour and different materials which will be required, then he is in a position to exercise efficient entrepreneurship only by offering (*a*) his services as an organiser and (*b*) the use of any resources he possesses, at a salary and rent determined by the value of those services and resources in competing pursuits. Tendering can, in such circumstances, simply cover the equivalent of salary plus rent. Yet tendering alone can appropriately determine these things. No other principles of valuation exist. The cost-plus device and derived expedients have no rational basis at all, so far as I can see ; and what is more remarkable is that they place a premium on extravagance. The State's contract with a firm so placed might well include an " incentive " clause under which the remuneration of the management varies *inversely* with costs. But that is the very opposite of the cost-plus system. Once again, I feel that the obstacle preventing a clear recognition of this point is the fact that the distributive consequences of free tendering might be obviously unfair in either direction. Although leading to the least-cost arrangement, the free determination of the salary and rent elements might lead to the incomes of managements and shareholders being higher than is justified in the light of any principle of justice. On the other hand, the incomes so determined might conceivably be less than is demanded by justice.

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[1] If tendering is risky because the price of co-operant resources cannot be adequately predicted, then tenders should be submitted in elastic form, to allow for changes in the price of such resources. The purchaser (i.e. the State) can properly be expected to bear that type of risk. This point is quite separate from that of the time factor in tendering.

This brings us back to the distributive issue—the possibilities of income stabilisation. At this point I must confess that I feel like Mr. Horsefield felt when, explaining a much less drastic system, he remarked: "The patient reader will doubtless sit back, rub his eyes, and ask what sort of fairy-story is all this logic run mad? How can such a fantastic scheme possibly be put into operation?"[1] But I certainly do not believe that any *simple* and *readily acceptable* scheme for compensation through income stabilisation is devisable. To work out and to apply such a system requires unusual imagination, expository skill, courage and detailed knowledge. New problems encountered under the stress of war do require novel and hence fantastic-looking solutions, the distributive problem above all others. The disorganisation and destruction caused by bombing and other aspects of total war are bound to force a recognition, however reluctant, of the necessity for income stabilisation and equitable distribution. Why should not the same principle be applied to rectify the income losses due to the substitution of war demand for peace demand? Perhaps it is unreasonable to contend that war emergencies should have forced the recognition of this principle. But as I write the authorities do appear to be groping towards it.

When I say that the British authorities appear to be groping towards the distributive principle which I am trying to establish, I mean that they are at any rate beginning to recognise that the distributive problem is somehow separate from the productive issue. The moratoria provisions of the Courts (Emergency Powers) Act were based on a glimmering of the notion. The Liabilities (Wartime Adjustment) Bill, which is under consideration as I am writing, goes much further in protecting the unlucky war debtor. But the problem is still regarded merely as involving adjustments (dictated by Liability Adjustment Officers) between creditors and debtors. Suppose the creditor is also unlucky! The Bill apparently contains no real solution. The authorities have perceived, however, that in certain glaring examples of injustice due to specific State action or war hazards compensation is inevitable, quite apart from collective insurance against certain war risks. In some cases they have endeavoured, unwittingly, to recompense losses by actually authorising the further exploitation of consumers. In other cases they have tried more or less consciously to do so. But they did honour the real principle when the Cotton Associations were paid £500,000 as compensation for the State taking over completely the import and distribution of cotton. Again, there was apparent recognition of the principle when some of the bombed-out tenants on Crown property were relieved from payment of ground rents. But such compensations and concessions have been haphazard. As I write, no general rules have been thought out, as far as one can see. Only the more powerful and articulate interests seem to have been considered. Apparently the State has been appalled at the financial consequences of comprehensive and all-embracing compensations; but income stabilisation should facilitate and not compete with or hinder taxation for war purposes. As *The New Statesman* complained in the spring of 1941, "the whole problem of compensation now tackled piecemeal and on the basis of completely divergent principles must be reconsidered before permanent injury is done to the body economic and politic." But, a complete grasp of the separateness of the distributive and productive schemes could alone permit a satisfactory solution of the problem; and neither *The New Statesman* nor any other journal has, as far as I know, come near to pointing this out. Whether by the time this article is published the apparent inhibitions against a comprehensive form of income stabilisation will have been overcome, I cannot say. The growing stress of war production seems to make it imminent.

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[1] J. K. Horsefield, *op. cit.*, p. 87.

On the Measurement of Capital

By L. M. Lachmann

I

Few economists will deny that in recent years the rapid *rapprochement* between theoretical and empirical economics has been one of the most encouraging features of the evolution of their science. The remarkable progress which the investigation of problems connected with the analysis and measurement of national income has achieved gave convincing proof, if such was needed, that co-operation between theorists and statisticians is capable of giving rise to a clarification of concepts as well as to fuller understanding and more exhaustive utilisation of available statistical data. Nevertheless, as has often been pointed out, it is a necessary condition of this co-operation not only that theorists present their theses in a verifiable form, but also that econometricians be aware of the economic nature of the processes underlying the phenomena which they are measuring.

To the present day most economic theory has evolved along static lines. The adaptation of its theorems to a dynamic world, as witness the problem of expectations, has proved a more than formidable task. But in no field of economics is the need for a break with the static tradition and for a new and dynamic approach more imperative than in the theory of capital. As Professor Hayek has shown, a world without, or with only generally foreseen, change is not at all a " capitalistic " world, as in it none of the problems the solution of which is the typical function of the capital-owner would present itself. It was therefore only to be expected that contributions to the econometrics of capital which do not keep abreast of the present level of knowledge of dynamic phenomena as contained in the modern theory of capital would go badly astray.

In this paper we do not propose to make a contribution to this dynamic theory of capital. We have nothing to add to the analysis with which Professor Hayek has presented us, but shall set ourselves to the more modest task of utilising the light it sheds for the exploration of some problems in the econometrics of capital. In the first part of this paper we shall examine certain results of a recent attempt at a statistical evaluation of the quantity of capital and its productivity. In this we shall learn that the theoretical study of problems connected with the dynamics of the capital structure, so far from being an intellectual parlour-game for the fastidious, is an entirely indispensable condition for the proper understanding of economic phenomena in a world of change, and that his neglect of it has led a distinguished statistician into serious misinterpretation of his statistical data. In the second part we shall adumbrate a method for the measurement of the productive contribution of capital which, we hope, will at least be unexceptionable on this score, whatever its other defects may be.

II

In his recent book[1] Mr. Colin Clark devotes a chapter to "The Rôle of Capital in Economic Progress" (pp. 374–422). In it he is "concerned with the relation between long-period economic progress and the accumulation of capital" (374). The measure of this relation he finds in "the long-period marginal productivity of capital, that is to say, the increase in annual real income in any community consequential upon an increase in its stock of real capital, other factors remaining unchanged" (374). Needless to say, this definition raises at once, in its most general form, an issue pivotal to modern capital theory, which, of course, is based on the proposition that no important change in capital is conceivable which would leave the "other factors unchanged". Nevertheless, we shall here refrain from criticism on *a priori* grounds and adopt the method of immanent criticism instead. In this and the following section we shall confine ourselves to pointing out that even if "the stock of real capital" were a meaningful concept, Mr. Clark would none the less be prevented from measuring it by the inadequacy of his material for his purpose and, in particular, by the fact that the influence of "other factors ", so far from being eliminated, is actually one of the salient features of his time series. We shall therefore not be surprised to learn that our author on occasion arrives at strange results.

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[1] Colin Clark, *The Conditions of Economic Progress* (Macmillan, 1940).

Mr. Clark shows himself not unaware of the nature of the difficulties confronting him. " The first difficulties of measurement are theoretical. There are three entirely separate concepts of the basis on which capital can be measured, namely market value, replacement value and cost price. In the case of consumption goods such difficulties do not arise . . . But in the case of durable commodities wide differences can and do occur " (375). However, he comforts himself with the reflection that " in the long run " forces are operative which tend to tie the three value sources together. " All that can be said is that with the lapse of time there are forces tending gradually to bring the three values together. If replacement value is high relative to market value, there will be no incentive to erect new buildings, as has indeed actually been the case in many countries in the last twenty years ". But does the example of the building values not suggest that even twenty years may not be long enough to qualify for the " long period " ? Besides, in a period which is long enough to allow such equalising forces to become operative, new disturbing influences are likely to supervene which may actually make the three values diverge even more. It would seem that this comforting thought of our author is based on a simple confusion between " long periods " in the ordinary sense, in which any number and variety of factors may come to influence events, and the " long period " of economic theory in which by definition nothing ever occurs but the process by which the dependent variables adjust themselves to the change in data which took place at the beginning of the period.

The author believes that, whichever of the three values we adopt as our standard, we shall not go wrong as long as we use consistently the one we select. Price fluctuations are to be eliminated by the use of index numbers. The question is, of course, whether those who made the records on which our data are based used the same consistency of method, but this question is nowhere discussed.

In applying his method of measurement, based on original cost and deflation by price index (376), to fixed capital in manufacturing industries in the United States, Mr. Clark finds that the quantity of capital rose from 100 in 1919 to 112.5 in 1929 and afterwards fell to a low level of 94 in 1935. " Figures of Capital Assets taken from Corporation Income Tax Returns tend to confirm our index . . . These returns give $25.46 milliards as value of capital assets (land, buildings and machinery) for 1925 and $25.62 milliards for 1932 . . . After 1925, we may therefore safely say, there was no net addition to the quantity of manufacturing capital up to 1932—a very remarkable conclusion " (382). But the most remarkable conclusion these figures permit us to draw is certainly as to the inadequacy of a theory of capital in which misinvestment has no place. For what they indicate clearly enough is that more or less all the capital which in the years prior to 1929 had been invested in American manufactures turned out to be misinvested and had subsequently to be written off.[1] What, however, they do not indicate is that in 1935 the American economy was less well equipped with fixed capital in manufacturing industries than in 1919, for it is of the essence of misinvestment that while, like all investment, it adds to the resources of society, it nevertheless adds less than it might have added, and certainly far less than its investors expected it to add. It is this disappointment of investors' initial expectations which the process of writing down asset values reflects.

The dilemma with which misinvestment confronts an investigation of capital changes, the conceptual apparatus of which is exclusively framed in quantitative terms, consists precisely in this: We have to count misinvested capital either at zero value, in which case we underrate the addition to resources, or at cost value, in which case we exaggerate it. Valuation at market value would conflict with the consistent use of our standard unless we assessed all other capital in the same way. Moreover, both timing and extent of the correction of book values are perfectly arbitrary, as is clearly seen in the case of American manufactures from the " decline in capital " from 104 in 1932 to 94 in 1935, i.e. during a period when the worst of the depression was over. Mr. Clark, quite consistently, chooses the first method and identifies misinvestment with no investment, but is thus led to the startling conclusion that then there must have been increasing returns! "So violent was the tendency to increasing returns in the U.S.A. that a greatly increased output was produced from a stationary volume of factors of production" (385).

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[1] That actually the writing down of capital book values and not disinvestment in the ordinary sense was responsible for this apparent decline in the quantity of manufacturing capital is obvious, if not from common sense, from a glance at the Kuznets figures for capital accumulation on p. 397. In the United States total net disinvestment for the four bleak years 1931–34 was $9.6 milliards against a net investment figure of $10.1 milliards for 1929 alone.

In the case of Great Britain Mr. Clark finds that the money value of capital increased from £9·435 milliards in 1928 to £11·725 milliards in 1935 (393). As "Figures for Great Britain, however, have been measured throughout at market values" (376), these figures have first to be converted into "real terms", and for this purpose our author conceives the necessity to allow for the effect of changes in interest rates on asset values. Choosing the yield on consols as representative interest rate he multiplies both figures by their respective consol yields and thus obtains a "decline in real terms" from £44 milliards in 1928 to £35·2 milliards in 1935. At this result of his own ingenuity our author shows surprise. "It is probably the case that by 1935 values of capital goods had not yet adjusted themselves to the strong changes in interest rates and replacement costs which had occurred during the years immediately preceding" (393). But on his own showing this should disqualify the 1935 results from serving as indicators of the long-period growth or decline of capital—if indeed there were any others to take their place.

III

For Mr. Clark the determination of the quantity of capital is preliminary to the measurement of its long-period productivity. His measure is the quotient of total capital and total output, C/P, in other words the quantity of capital used per unit of output. Its growth or decline, the relative increase of numerator and denominator, are to indicate the existence of increasing or decreasing capital costs. From the table on p. 381 we find that in American manufacturing industries C/P fell from 165 in 1919 to 132 in 1929, then rose to 228 in 1932, to fall again to 126 in 1937. But do these figures indicate the quantity of capital *used* per unit of output?[1] It is obvious that the spectacular rise from 1929 to 1932 must be largely due to the inclusion of unutilised equipment in the numerator at a time when the denominator was on the down grade, and vice versa for the heavy fall after

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[1] Professor P. H. Douglas, the originator of this type of econometrics, was well aware of this problem. *Cf.* his cautionary remarks in his *Theory of Wages*, New York, 1934, pp. 131–2.

1932. This goes to show that in a society which is making less than full use of its resources the numerical aggregate of these resources, even if it were measurable, is irrelevant to the determination of their productivity unless qualified by an index expressing the degree of their utilisation. The main defect of Mr. Clark's method is thus seen to lie in the lack of identity between the object of his statistical measurement and the productive agent the contribution of which he wishes to measure. In the case of under-utilisation of resources the former concept is wider than the latter, fluctuations in which will therefore appear under the guise of " variable returns ". But as we saw in the previous section, the reverse may also happen : a change in book values, the basis of our statistical data, would affect our numerator without, of course, having any real effect on productivity. The influence of both factors combined is recognisable in the United States between 1932 and 1935, when total manufacturing output (1919 = 100) rose from 75 to 107, while fixed manufacturing capital, for the reasons previously discussed, declined from 104 to 94. The divergent movement of numerator and denominator, for quite different reasons, thus explains the fantastic fall in C/P from 228 in 1932 to 144 in 1935.

Mr. Clark takes a different view. To him these figures mean that " Since 1922, therefore, the U.S.A. has witnessed a rapid expansion in the volume of manufacturing output with a decline not only in the labour force but also in the quantity of fixed capital used. This is indeed confirmatory of the idea previously suggested that about the year 1920 some radical change came over the whole productive system of the U.S.A." (382).

Perhaps it will be argued that Mr. Clark's failure to establish a satisfactory criterion of measurement for the growth and productivity of real capital has to be ascribed less to any inherent defects of his method than to sheer bad luck in the choice of his time period. It is, of course, true that in no branch of human activity does the inter-War epoch lend itself easily to inductive generalisations. Certainly no period in modern economic history was less well suited to the elimination of " other factors ". Nevertheless, we venture to doubt whether a series of capital figures taken in the same way from another period in the economic history of a world of change would have yielded very different results. The fundamental dilemma remains, viz., that our period is either so short that changes in the degree of utilisation of the equipment overshadow growth, or so long that for a considerable proportion of equipment its original, and even replacement cost, no longer forms a possible basis of valuation. In neither case can the " other factors " be eliminated.

Nor is this impression incapable of verification. Closer inspection of Table 13 in Professor Douglas' *Theory of Wages*, the cherished prototype of Mr. Clark's exertions in the econometrics of productivity, reveals for a different period the same problems and the same bewilderment. Professor Douglas finds that, in American manufacturing industries between 1890 and 1922, C/P, the quantity of capital per unit of output, increased from 100 to 180 while over the same period L/P, the quantity of labour per unit of output, fell from 100 to 67. But had he chosen 1921 instead of 1922 as his terminal year, the figures would have been 233 for C/P and 82 for L/P ! Besides, it is difficult to reconcile a rise in L/P from 81 in 1916 to 90 in 1918, evidently indicating a heavy strain on the existing equipment and its utilisation beyond optimum point, with a large rise in C/P from 132 in 1916 to 164 in 1918. It is more than probable that " write-ups " on the grand scale had something to do with this astonishing figure.

We therefore conclude that Mr. Clark's attempt to establish a method for the measurement of the quantity and productivity of capital cannot be described as an unqualified success.[1]

IV

Thus far this has been an essay in destructive criticism. We have tried to expose the fallacies of a quasi-static theory of capital by showing that, if available statistical records were interpreted in accordance with it, we should obtain an absurd picture of the world. We have seen an attempt to measure the growth of capital in real terms fail, mainly because of the impossibility of eliminating the effects of other factors from the time series. We have found the determination of the productivity of capital incapable of accomplishment because of the lack of identity between the object of statistical measurement and the productive agent the contribution of which is to be determined. The latter fact suggests that " the total quantity of capital in real terms " may not be a meaningful, and in the present context is not a relevant, concept. The former experience points to the conclusion that even if it were a meaningful and relevant concept, it would none the less be incapable of quantitative evaluation.

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[1] To the future student of the history of economic thought it will be a matter of some interest that the same author who on p. 281 wrote : " Both temporal and spatial comparisons indicate that depreciation will become a question of rapidly increasing importance both in industrial management and in economic thinking," warns his readers on p. 374 that " we must not fall into the old-fashioned error of regarding the accumulation of capital as the limiting factor in economic progress. Possibly it is not even the predominant factor "—apparently quite unaware of the inconsistency between the two statements.

Nevertheless, the reader will not, it is hoped, infer from our strictures that where the productive services of non-permanent resources are concerned no meaningful measurement is possible at all. On the contrary, as we shall try to explain, our objections are strictly confined to the measurement of the *source* of these services, but do not extend to the measurement of the services themselves.

As social scientists we are, of course, entitled (and in the circumstances of our time almost obliged) to reject the claims of a spurious " scientism " which harbours an almost superstitious belief in numbers and identifies measureability with intelligibility.[1] But there is surely no reason why we should not try to measure where measurement helps us to a better understanding of social phenomena.

Where, as is the case with marginal productivity, the main propositions of a theory are stated in quantifiable, if not in quantitative, terms, to renounce all measurement would be to rule out all possibility of empirical verification. Also, in economic policy no rational discussion of the distribution of incomes would be possible inasmuch as all such discussion has to run in terms of a necessarily quantitative comparison between shares in the national income and the productive contributions of income-receivers. Furthermore, it is clear that a concept like " the rate of profit ", pivotal to the dynamics of capital, in itself involves the quantifiability of some aggregate of resources to which it is related as a " rate ". The conclusion we have to draw is that, whilst " the total quantity of capital in real terms " may be a meaningless magnitude, and not measurable either, some proportion of it, as also the flow of services emerging from it, is germane to essential propositions of economic theory. But how is this proportion to be determined ?

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[1] On this point and, in connection with it, Lord Kelvin's famous dictum, everything necessary from the point of view of Social Science has now been said by Professor Knight—and with the appropriate emphasis, too! See F. H. Knight, " What is Truth in Economics ? ", *Journal of Political Economy*, February, 1940, p. 18n.

First of all, the productivity of capital involves relationships between three magnitudes, the stock of non-permanent resources, the service stream flowing from it, and the output stream produced by capital services jointly with the services of other factors of production. The main difficulty confronting us lies in that, since the stock of capital resources is capable of giving rise to service streams of various size and shape, there seems to be no determinate relationship between it and the output stream. Hence the relationship determining the productivity of capital has in the first instance to be established between service stream and output stream.

But it is readily seen that in measuring the stream of services flowing from the stock of capital resources[1] we are *ipso facto* measuring the depletion of the stock owing to its productive contribution. Evidently both are two different aspects of the same phenomenon. Here then we have a uniquely determinate relationship between service stream and a *proportion* of the capital stock, and—since with constant co-efficients of production the relation between service stream and output stream is also determinate—between output stream and that proportion of the capital stock of which, owing to its depletion in the process of production, we may say that it " enters " output. Needless to say, the size of this proportion depends on the length of the period over which we measure the output stream, hence it is a function of time. We also obtain a valuable criterion of distinction between capital changes which are due to the using up of resources in the production of output and capital changes due to causes which are " external " to the production of output. If only we can contrive to find a satisfactory measure of the stream of capital services, we shall, by the same token, have determined the proportion of capital resources which enters output.

Since this approach involves the time factor, the selection of a suitable period of measurement becomes a matter of some significance to us. The main defect of a theory which operates with the total quantity of capital lies precisely in this : that a period long enough for our proportion to become identical with the total capital stock, long enough, that is, for the stock of non-permanent resources to yield all the services of which it is capable (in other words, a period in which all fixed capital has become circulating, has been used up and written off), is in a world of change apt to bring some unforeseen change which will upset all prior arrangements. The period we have to choose for the measurement of the productive contribution of capital thus depends on the time dimension of the productive plans involving the use of it. Here we encounter the familiar difficulty of all period analysis, the lack of synchronisation between the production plans of different producers. However, fortunately for us, diverse though the time shape of individual production plans may be, the method of checking results is highly standardised. In business accounting the period for which records are examined, results assessed and a balance sheet drawn up is the year. It seems to us therefore that in a world of change the best measure of the amount of capital used up in production is to be found in the annual depreciation quotas on fixed capital.

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[1] This expression is here used because after all we need a concept which covers in its totality the heterogeneous assembly of houses, mines, shipyards, restaurant equipment, etc. (including many scrapheaps) which make up " Capital ". The reader, we trust, will see the difference between this and " the total quantity of capital in real terms " and not accuse us of using the same concept under a different name.

In propounding this suggestion we shall, in the first place, try to elucidate a little the economic function of capital accounting in a dynamic world. Thereafter we shall indicate in what way and by what methods data obtained from actual business records have to be modified in order to make them a suitable instrument of measurement for our purposes. Finally, we shall have to show why the method we advocate is not open to the objections which in the first part of this paper we raised to Mr. Clark's method.

V

The method which we here advocate for the measurement of the proportion of capital resources which annually enter the social product is a method which Dr. Fabricant of the National Bureau of Economic Research employs for the determination of Capital Consumption in the United States from 1919 to 1935.[1] Though ostensibly his aim is the measurement of the difference between gross and net national income, it is evident that this difference equals the total capital change other than gross capital formation. More important is that for Dr. Fabricant, being thus interested in one type of capital change, the determination of Capital Consumption is only part of his task. For only Capital Consumption, the amount of capital used up in production, and Capital Adjustment, the capital changes due to causes external to the production of output, together make up total capital change other than gross capital formation, i.e. the capital change he seeks to determine. The measure of Capital Consumption he finds in annual charges to income account (depreciation on fixed capital, depletion of wasting assets, plus some minor items like provisions for accidental loss and maintenance and repair expenditure), the measure of Capital Adjustment in (intermittent) charges to capital account (retirements and abandonments and revaluations of capital assets[1]). In so far therefore as the object of his investigation coincides with ours, i.e. fixed capital used up in production, he virtually employs the method we advocate.

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[1] Solomon Fabricant, *Capital Consumption and Capital Adjustment* (National Bureau of Economic Research), New York, 1938.

But it may be doubted whether in actual accounting practice the distinction between charges to income account and charges to capital account can be regarded as symmetrical to Dr. Fabricant's distinction between "internal" and "external" capital change. If there is a parallelism, it is at least not a very close one. On the one hand, obsolescence, certainly the result of "external" factors, is usually provided for in depreciation in so far as it can be foreseen.[2] On the other hand, there is the case, well known from the history of all inflations, where depreciation allowances, because based on original rather than reproduction cost, habitually understate the amount of capital used up in production, with the result that sooner or later a charge to capital account has to be made. It seems to us, therefore, that the accounting distinction between charges to income and to capital account is better regarded as reflecting the economic contrast between foreseen and unforeseen changes.[3] Nevertheless, it still remains true that we have to exclude charges on capital account from our computation of capital used up in production. Our next task consists in explaining why this is so.

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[1] Retirements and abandonments, important mostly in the case of railways, are, of course, only another form of asset revaluation. "By their nature they are confined to adjustments for *unforeseen obsolescence* (our italics, L. M. L.) and inadequate depreciation, depletion and maintenance". *Fabricant*, p. 266. See also the two following footnotes.

[2] "As a matter of fact, business practice ignores the distinction between ordinary depreciation and obsolescence so far as the latter is normal, that is, predictable. And replacements, renewals, and repairs incurred through ordinary (that is, minor) changes in the arts and in demand are charged to current expense. It would therefore be statistically impossible, even if logically possible or desirable, to eliminate the effects of obsolescence. But normal obsolescence at least is relevant to the economic measure of capital consumption." (*Fabricant*, *op. cit.*, pp. 13–14.) It will be noticed from the first sentence that the author uses the words "normal" and "predictable" as synonyms.

[3] This is at least implicitly admitted in Dr. Fabricant's distinction between "normal" and "unanticipated" obsolescence, or in the sentence: "The criterion of reasonableness must

In a world of perfect foresight depreciation allowances, in so far as they cover " normal " obsolescence as well as ordinary wear-and-tear, will, as a rule, suffice to ensure capital replacement on a scale commensurate with the permanent flowing of a constant income stream. But in a world of imperfect foresight this need not be so, and the aggregate of depreciation allowances over a number of years may, for familiar reasons, either exceed or fall short of this standard ; hence the recurrent necessity of revaluation of capital assets. The frequency of such revaluations offers strong evidence that in a world of change the " maintenance of capital " is not a practical possibility. Adopting Swedish terminology we might say that depreciation allowances are *ex ante* estimates of the amount of capital used up, whereas the subsequent correction of these estimates by a charge to capital account determines this amount *ex post*.

For the purpose of the measurement of capital changes during a sequence of years there are three alternative methods of dealing with these intermittent revaluations. Each of them has its merits according to the purpose in hand and the aspect of the problem we wish to stress. There is first Dr. Fabricant's own method which consists in simply adding up charges on income and on capital account. Since he is interested in total capital change other than gross capital formation over the period 1919 to 1935, this is no doubt an entirely legitimate procedure. A second method, more, we believe, in accordance with the essential meaning of period analysis, would be to include or exclude Capital Adjustment from our computation according to the length of the period chosen. For instance, when computing the quantity of capital entering annual output we might well confine ourselves to depreciation and disregard revaluation, while we could not afford to disregard it where, like Dr. Fabricant, we had to deal with a period of more than 15 years. In adopting this method we would do more than merely draw a conventional distinction between " long " and " short " periods and the forces operating in them ; we would, that is, implicitly admit that there are forces making for capital

rest, as in the distinction between charges on income account and on capital account, on the kind of expectations and anticipations—usually implicit—held by those making capital commitments," p. 14.

change which are quite unrelated to the productive contribution of capital. It is on a recognition of this fact and its implications that the third method, the omission of Capital Adjustment from the computation of capital, is based.

We learned above that the difference between foreseen and unforeseen changes provides the economic rationale for the accounting distinction between charges to income account and to capital account. As in general the effect of unforeseen changes on capital value cannot be apportioned to individual income periods, it is only logical to charge it to capital account. Yet this does not equally apply to all types of unforeseen change, and in fact there is a further important distinction which is germane to our argument. There are, on the one hand, changes which, although unforeseen at the moment at which the production plan was made, do not, when they occur, altogether upset the plan, do not necessitate any important modification of the pattern of resource use as chalked out in the plan (there may and always will be minor technical adjustments), and which might very well find their financial expression in charges to income account if accounting methods were more elastic than they actually are. A good instance of this, as was mentioned above, is provided by the history of inflations, in particular their earlier stages: Where in such a situation depreciation methods are based, as they traditionally are, on original rather than reproduction cost, sooner or later a charge to capital account will have to be made, the necessity for which, however, arises not from the nature of the case but from the nature of bad accounting. Where this happens we are, of course, unable to accept depreciation allowances as compiled from actual business records at their face value, and in a moment we shall have to discuss methods of their rational reinterpretation. But there is another type of unforeseen change, arising, for instance, from technical progress or changes in the social environment in general, which upsets the whole production plan and makes it impossible to adhere to the pattern of resource use as originally chalked out in it. In the former case it was still possible, after the change had occurred, to allocate its effects to single income periods. In the case of inflation all we have to do is to allow for the higher cost of replacement goods in the depreciation allowances for subsequent years. But in the latter case no such allocation is feasible, for here the very occurrence of the change marks at the same time the failure, and consequently the end, of the production plan. Now an entirely new plan has to be drawn up, and the failure of the first finds its appropriate expression in a charge to capital account.

We contend that in the computation of the amount of capital which gives rise to a certain stream of services, and hence indirectly to a given output stream, charges to capital account in so far as they reflect the latter type of unforeseen change must be disregarded. In not doing so we would obviate the very reasons for which we adopted period analysis, for our chief reason was our recognition of the fact that in a world of change the measurement of capital over periods so long as to involve alterations in the mode of its use is logically impossible and, if nevertheless persisted in, bound to lead to absurd results. Hence, in applying period analysis we have to select our period so as to make it co-extend with the carrying out of a coherent production plan. But revaluation, as we saw, usually marks the failure of a production plan. It follows that our period has to be selected in such a way as to have it ending before such necessity arises.

However, as we pointed out, in reality asset revaluation often marks not the failure of a production plan but the failure of accountants to understand the nature of the processes the effects of which they are about to assess. Frequently charges to capital account are made where charges to income account would be quite as feasible. It follows that if in our computation of capital resources we disregarded these charges to capital account like all others, we should be disregarding something which really ought to be included in depreciation. Hence, if we wish to omit all charges to capital account from our computation, we must somehow modify depreciation data as compiled from business records in order to make them cover these cases.

Here we are extremely fortunate in being able simply to follow Dr. Fabricant, who has worked out most ingenious methods in order to deal with this problem.[1] By making judicious use of an inquiry by the New York Stock Exchange of companies applying for the listing of their securities, he first establishes the principles to which actually the majority of American companies adhere in their depreciation practice.[2] As was to be expected, it is found that the principles underlying their practice are very different from what they would have to be if the data compiled from balance sheets were to be of immediate use for our purposes. Still, the result of the inquiry reveals that, however illogical these methods may be from the economist's point of view, there are certain broad underlying principles to which the large majority of company accountants adhere and which are not incapable of rational reinterpretation.[1] The two main defects of depreciation data are found to be that they ignore variations in the degree of utilisation, and that they are largely based on original rather than reproduction cost. But Dr. Fabricant shows convincingly that these are by no means insurmountable obstacles. If depreciation allowances are to reflect the amount of capital resources responsible for the output of a period, they will have to be on a " service-output " basis,[2] i.e. they must vary with variations in output and the degree of utilisation. But in practice (this is one of the principles established by Dr. Fabricant) depreciation is usually on a " straight line " basis, i.e. annual depreciation is computed by dividing the original cost of capital equipment through the prospective number of years of its economic life, and irrespective of the variations in output.[3] We therefore have to construct an index of output by means of which we can convert our data from a " straight line " to a " service-output " basis.[4] The same applies to replacement cost. Here we have to find the age-distribution of industrial equipment,[5] and then to construct a price index for equipment goods.[6] This done we are able to convert our data from an original cost to a reproduction cost basis.

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[1] *Fabricant, op. cit.*, Part IV, chapters 9, 10, 11.

[2] *Fabricant, op. cit.*, pp. 64–86.

Finally we have to show why the method here proposed is not open to the objections which in the first part of this paper we raised to Mr. Clark's. After all, it might be said, our data as well as his are finally derived from book values of capital assets, as depreciation allowances computed on a " straight line " basis are, of course, merely a function of book values. We made our statistical raw material pass through a processing stage, but why could not Mr. Clark's data be subjected to similar treatment ?

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[1] For a tabulation of depreciation practices see Table 13, pp. 66–7.

[2] *Op. cit.*, p. 194.

[3] In the United States " In 1929 the gross national product consisted of 93.6 billion dollars. To obtain a net figure, the national income, there was deducted 10.2 billion for depreciation, depletion, and losses by fire of the nation's fixed capital. In 1933 the corresponding figures (expressed in 1929 prices) were 60,5 and 9,5 billion dollars. In other words, in 1929 one-ninth, and in 1933 one-sixth of the gross product was accounted for by these items of capital consumption." *Fabricant*, p. 5.

[4] *Fabricant*, pp. 195–200.

[5] *Fabricant*, Table 33, p. 181.

[6] *Fabricant*, Table 32, pp. 178–9.

The answer is that by disregarding Capital Adjustment we contrived to eliminate those capital changes which are due to unforeseen events entailing discontinuity in the mode of use of capital resources, and hence irrelevant to the computation of the amount of capital used up in production. Our main charge against Mr. Clark was that the object of his statistical measurement was not identical with the aim of his investigation, viz., the non-permanent sources of productive services. On the one hand, his data were seen to be affected by changes in book values of capital assets which did not reflect concomitant changes in the productive contributions of these resources. On the other hand, his data did not reflect changes, like variations in the degree of utilisation, without taking account of which it is impossible to determine the productivity of any factor. The former problem we endeavoured to overcome by ignoring charges to capital account and by the choice of an appropriate time period, the latter by correcting our original data for changes in prices and output. Instead of measuring a stock of resources capable of giving rise to service streams of various length and shape we prefer to measure the depletion of the stock consequent upon the flowing of each service stream.

One objection we hope will not be raised against us, viz., that by basing our computation of capital on subjective estimates we are infringing upon the objectivity of measurement. Such argument would incidentally raise a fundamental issue in the methodology of Social Science, and it would be possible to meet it on a broader plane by discussing the meaning of objectivity in social life. In the present context we may forestall it by pointing out that in the field of capital, where the physical attributes of the components of this heterogeneous mass cannot serve as criteria of classification, all measurement must necessarily proceed in terms of value relationships, and all economic values are ultimately derived from subjective estimates. We readily agree that where a market is sufficiently large, generally accessible, and continuous over time, it serves to co-ordinate a large number of subjective estimates and thus may impart a moment of (social) objectivity to value relations based on prices formed on it. But it can hardly be said that the second-hand market for industrial equipment, which would be the proper place for the determination of the value of capital goods which have been in use, satisfies these requirements, and that its valuations are superior to intra-enterprise valuation. On the other hand, as Dr. Fabricant has found, business accountants in their depreciation practice as a rule follow a general but very distinct pattern of behaviour. If there is such a thing as institutional objectivation of subjective attitudes, it applies to modern business accounting certainly no less than to market values.

We must here confine ourselves to this brief and very sketchy outline of an approach to a problem the intricacy of which has hitherto perhaps not always been fully recognised. We are painfully conscious of its many shortcomings, like the snares implicit in the construction of a price index of capital goods under conditions of technical progress or in disregarding intersectional output variations, but none the less we venture to put it forward as a contribution to the discussion.

The Pre-War "Black" Market for Foreign Bank Notes

By J. L. D. CIANO

The restrictive legislation made necessary by war conditions has facilitated the growth of "black" markets, and although their characteristics are now fairly well known, the part they played in the economic life of pre-war days is less familiar.

In many respects "black" market is a harsh label as applied to the pre-war dealings in restricted bank notes of the London dealers, for although this market sometimes dealt in smuggled currencies it was no less legal and official than the market for foreign exchange proper.

The "black" market for foreign bank notes was born as a direct consequence of the legislation imposing restrictions on their free movement since 1931. These restrictions were but a part of a larger scheme of currency control, but with each new currency law the restriction on the movement of notes became more stringent. Perhaps before reviewing the results of this legislation it will be convenient to explain briefly how the foreign bank note market worked in times of free movement.

The foreign bank note market for Great Britain is centred in London, and normally the principal dealers are the branches in London of the foreign banks, the foreign branches of the big joint stock banks, a few English banks specialising in foreign trade, certain specialised money dealers and some of the larger tourist agencies. The money dealers in this market make the purchase and sale of foreign bank notes their chief business if it is not already their sole occupation. They are specialists in bank notes. Most of their business consists in buying and selling bank notes of all kinds, and dealing in bank notes is in many ways different from ordinary foreign exchange dealing; it requires expert knowledge of notes, the regulations regarding note issues and their circulation, in order to guard against the risk of forgery which is only too real in this market; and such knowledge is only gained by long experience.

The foreign banks are by far the most important elements in the market as they usually hold fairly large balances of the notes of their own country and as a rule they are the chief source of such notes. The rate of exchange for foreign bank notes depends largely on the demand for and the supply of them; and when allowance is made for postage, insurance and interest, it cannot vary much from the ordinary exchange rate, because if it rises above this, bankers will find it pays to import notes by air mail, taking the amounts from their foreign balances abroad and incurring the necessary expenses. Conversely, if the rate for foreign bank notes falls too far below the ordinary exchange rate it will pay the bankers to export the notes, paying the usual expenses, and add them to their foreign balances. So that there are limits within which the rates ruling for notes can fluctuate in a free market. There may be instances where it is both possible and convenient for the dealer to sell at rates slightly more favourable than the ordinary foreign exchange rate; for example, if a dealer has accumulated a parcel of notes which he is about to remit for his credit to some bank in a foreign country and a customer expresses his willingness to use such an amount, it might pay the dealer to sell them to him at a slightly more favourable rate than the rate ruling at the time for foreign exchange because he can thereby save the expenses of remittance. This kind of transaction was common during the busy tourist season. Tourist agencies incur heavy expenses in foreign countries, mainly to hotel proprietors, and often the most convenient way of settling their indebtedness is to hand their couriers who conduct the parties the amounts owed in foreign bank notes so that they can be paid over to their foreign creditors direct. They may have accumulated the bulk of these notes in the ordinary course of their business (buying small amounts from returning tourists), but more often they buy them from the market, where the bank note dealers compete with one another to quote them the finest rate possible. Here again demand and supply are the principal factors determining the rate for foreign bank notes.

The main demand for foreign bank notes comes from tourists and travellers, but there is also a considerable demand from emigrants for making small remittances to their relatives. The latter prefer notes to bankers' drafts because of the convenience to the recipients in the foreign country. It must be remembered that banking facilities in some continental countries are not so widespread as in England, and it sometimes happens that a villager in some mountainous district will have a ten-mile journey to the nearest town to find a bank; further, the network of branches is not so great as in England, there being more individual banks and fewer branches per bank. In some cases the beneficiary of a banker's draft drawn on a bank which has no branch in his particular town might be charged a small sum for expenses of collection. And where the recipient is illiterate there are many difficulties in cashing a bank draft. Therefore in such cases the convenience of remitting bank notes is obvious. Then there is the demand for foreign notes to hoard. Some potential travellers will lay in a stock of notes with the intention of using them at some future date, but more important still is the habit of those emigrants who convert their savings into foreign notes and keep them in their possession because they have no confidence in banks. The demand for using foreign notes for these purposes is fairly steady the whole year round, but there are heavy seasonal demands, such as the demand in the late winter and early spring for travel to the Riviera, Egypt, Southern Italy and Spain. There is the ordinary summer holiday season and the demand occasioned by winter travel, especially for winter sports. The emigrant demand for remittances is heaviest at Christmas and Easter. Banks endeavour not to hold more notes than the exigencies of their business prescribe, because large holdings involve loss of interest, but in the busy periods they cannot avoid carrying fairly substantial amounts, which they hasten to unload as soon as business permits. Seasonal demands are usually anticipated and only in abnormal periods is the rate likely to widen on account of the increased demand.

The supply of notes comes mainly from imports of notes direct from the foreign countries concerned. There is the steady flow from returning tourists and travellers bringing back unspent balances, and from the remittances of notes from abroad to this country for various purposes. Foreigners who have been resident in this country for some length of time and have repatriated often maintain links with England by continuing their subscriptions to clubs, newspapers or charities, and they sometimes remit bank notes for the equivalent of the amounts due. Similarly, they may send money presents to old friends or servants in this way, and also use the same medium for settling small debts which may have arisen through the purchase of goods in this country. In making payments to the United Kingdom bank notes will often be preferred to bank or Post Office drafts when the amount in question is small, because the cost of a draft and the inconvenience of obtaining one will be taken into account. The cost of a bank draft for a small amount may be the same as for a draft for a much larger amount owing to the fact that the charges for issuing bank drafts are not proportionate to their amount. Moreover, it is not easy for a person in this country without a banking account to cash a bank draft. But the influx of foreign notes from this source is small because for any substantial amount it will nearly always be cheaper to remit through the ordinary channels, that is, by banker's draft, mail or telegraphic transfer.

Some account must be taken of hoarding on the market. Tourist agencies usually carry fairly large stocks of foreign notes, and tourists and travellers often hoard their small balances with the intention of using them at some future date. Emigrants also hoard by way of saving where there is no faith in banking methods. This means that when there is an abnormal movement in the rate for foreign bank notes the hoarders are influenced to operate. If the particular currency that they are interested in depreciates they may lose confidence and unload their holdings on the market, thereby making the particular currency cheaper still; if on the other hand they anticipate a rapid recovery in the rate for those notes (taking the depreciation to be but transitory) they may be induced to buy and lay-in still further stocks of notes and this action of itself would help the exchange for the notes to recover. It is improbable that all the hoarders would view the matter from the same angle, however, and forecasts would therefore differ and express themselves into some buyers, some sellers, and some would be content to do nothing at all; but it is the balance of such operations that affects the bank note rate. There is also the purchaser of bank notes for speculative purposes to be taken account of, but in practice it is difficult to distinguish between the hoarder and the speculator. The former buys in order to save, but it cannot be said that he is indifferent to making a profit if the opportunity arises, as when the exchange rate for notes of his particular holding appreciates, thus making his stock more valuable in terms of sterling. The speculator buys with the sole intention of selling again at a profit. Pounds and dollars were bought and hoarded on a great scale in France in 1936, when there was much talk of devaluation, and the same thing went on in Italy in 1935, when political movements disturbed the confidence in the national currency.

With regard to the foreign exchange rate, the purchase or sale of foreign notes has the same effect as the purchase or sale of foreign balances, that is, it exerts pressure on the spot rate. For instance, when a French bank in London imports French bank notes it is equivalent to, or is the same thing as purchasing French currency on the Foreign Exchange market. During the holiday season, when holiday-making in France was popular, this importing of notes was a regular feature. The same was true of Belgium and Italy, the currencies of those countries being in demand to the extent that bank notes were being imported for tourist purposes. The opposite effect takes place when notes are sent to the foreign country, that is, that the effect is apparent when the notes are actually purchased from the sellers in this country, are then accumulated and sent abroad. Such accumulations are likely to take place at the end of the tourist season, when the returning travellers have disposed of their balances and the dealers find that they are buying much more than they are selling in those particular currencies, and they thus remit their surplus stocks to avoid loss of interest and to swell their balances in the foreign country. In normal times the foreign note market is a subsidiary of the foreign exchange market proper and the rates are as closely connected as are countries operating a fully-working gold standard to the gold " points ". The import and export costs of remitting notes are the automatic limits to the variations of the foreign bank note rate of exchange from the foreign exchange rates.

We have sketched the operations of the normal foreign note market and we must now look at the effect of restrictive legislation on its working.

When the rates for foreign notes moved only within certain well-defined limits, there was no incentive to buy an amount in excess of the normal requirements. There was no advantage in buying a larger quantity; in fact it was a positive disadvantage because the rate for bank notes is normally dearer than for currency drafts; in addition there was the inconvenience of handling and carrying large amounts of notes. It was only when the bank note rate diverged sharply from the foreign exchange rate that the acquisition of notes became more profitable. This cutting adrift from the foreign exchange rates was caused by the imposition of restrictions on the movement of notes which made them depreciate in value in terms of unrestricted currencies.

Where restrictions are imposed hoarders of notes find that their stocks immediately depreciate in value since they can no longer repatriate them at will, and since banks and dealers will buy them only at a discount if at all. Residents in the restricted note countries find that one of the ordinary channels for remitting funds abroad is closed to them. Bank note dealers will buy notes only at a considerable discount because they have now to take the risk of holding them till a buyer is found. Banks also will buy notes only in order to satisfy the immediate needs of their customers for foreign travel. They will pay only such prices as will compensate them for handling the notes and which will allow a sufficient margin against further restriction or depreciation. From these changed conditions the "black" market emerges.

The opportunities for increased profit encourage many persons to take risks and smuggling is the result. There is always a demand from travellers for the maximum amount of notes that it is permitted to import into the foreign country because the depreciated exchange makes it worth while to buy the limit. But the traveller who is willing to take risks will buy more than the authorised amount at the depreciated rate, for in spite of the severe prohibitory laws evasion is possible and smuggling profitable. But most travellers do not care to run such risks; the extra profit to be gained is not a sufficient compensation.

It is interesting to note that countries like Germany, Italy and Hungary had an especially heavy tourist traffic after the passing of restrictive exchange laws, largely as a result of the continuous State-directed propaganda used by those countries, resulting in the very attractive rates quoted for Registered Marks, Tourist Lire and Travel Pengos. Thus the demand for foreign notes for tourist purposes was unusually heavy during the period from 1933 to the outbreak of war. In spite of the risks of confiscation, many emigrants continued to remit sums of money to their relatives in the form of notes largely on account of the cheaper rate, but also for the reasons of convenience already mentioned. The many German, Austrian, Hungarian and Italian domestic servants working in England (by special permission of the Home Office) continued to make great use of this method of remittance and to convert their savings into bank notes, notwithstanding the risks that such holdings involved and of which they were fully aware.

There must have been loopholes in the currency control, for many persons succeeded in introducing bank notes into the restricted countries. Not all travellers are searched at the frontiers ; happily this is the exception rather than the rule, and tourists travelling on a special train or with a party conducted by a courier, are given every consideration by the Customs officials, who had been instructed by the Authorities to do everything compatible with their duty that would create the best possible impression on the foreign visitors. Further, the censorship on incoming mail was not at that time complete, so that opportunities for evasion existed.

The supply of notes to the " black " market came from both the normal sources and from smuggling. The chief source of supply of the ordinary market, the foreign banks importing direct, had completely dried up. The steady trickle of unspent balances brought back by travellers was available, but as travellers normally bring back very much less than they take away the supply from this source was not sufficient to cover the demand of intending travellers. The stocks of notes already in the country supplied the deficiency to some extent as they were dishoarded, but demand was satisfied only when supplies came from sources unknown. When the internal stocks of notes had been used up the supply depended entirely on what was brought back by travellers and the imports from unknown destinations. It is impossible to estimate the volume of this business. All that can be said is that the notes most in demand were nearly always available.

Smuggling went on on a fairly large scale and the evidence for it is in the prosecutions on the continent for these offences and the amount of notes that refugees were often able to dispose of. In Germany the many trials held for currency smuggling must have had some foundations in fact, although the savage sentences often inflicted could not be justified. Charges on this score were sometimes false and served only as an excuse to implicate some particular person for political reasons. Minor currency law offences were sometimes heightened for propaganda purposes when would-be political or religious refugees were charged. It is only to be expected that refugees will attempt to salvage as much of their property as is possible and that they will be prepared to run some risk in doing so. There was a regular traffic in smuggled notes in Italy with agents both inside and outside the country, as was disclosed in the trials of currency smugglers caught on the Franco-Italian and Italo-Swiss frontiers. The sums involved were often large. One of the last groups of smugglers to be caught on the Franco-Italian frontier at Ventimiglia included an Italian countess, a lawyer and three well-known business men from Genoa. They were attempting to smuggle out of the country two million lire in notes of all denominations, and the notes were found carefully packed in various corners of the countess's berth in the sleeping car of the Rome express. This was probably not the first time that this syndicate had attempted such a manœuvre. The increasing severity of the exchange laws did something to deter would-be smugglers, but it did not stop smuggling.

" Black " markets for foreign bank notes emerged in many centres. There was a big one for Italian notes in Nice, one for all the restricted currencies in Paris, Brussels, Amsterdam and London. The dealers in the London " black " market were not quite the same as those dealing in the normal free note market. The most important members, in fact the pivot of this " black " market, were the money dealers (and it must be remembered that money dealers in this context means specialist dealers in foreign bank notes), although some of the foreign banks remained as important operators. The note dealers are aware of the maze of currency regulations regarding bank notes ; they do not contravene them ; their business is to buy and sell notes and they are willing to do business so long as they can see an opportunity of making a profit. They deal in a commodity for which there is a demand; the risks they take are those of not being able to sell at a profit, that is, of being left with unsaleable goods on their hands if the demand should suddenly fall off, but the risks their customers choose to run are not their affair. They buy in the cheapest market and from all sources, the prices paid being a matter of negotiation in many cases. They are in telephonic communication with the banks and other dealers and in this way a market is established. Some of the dealers send their representatives round to the principal banks and tourist offices daily to deliver any notes ordered and to pick up any business that may be going; but the bulk of the business is done by telephone, when the bargaining and "higgling" of the market takes place. The foreign departments of the big joint stock banks were dealers only in so far as they had to purchase notes to meet their customers' requirements for travelling, and this meant that they would only buy those notes that could be freely imported by travellers. The denominations that were banned they did not touch, except for some unusual demand. They were sellers of notes that had come into their hands from the private hoards of customers or the unspent balances of their customers' tourist and travel expenses. The branches of those foreign banks in London whose parent country had placed restrictions on the import and export of their bank notes would be to some extent precluded from dealing in them owing to official pressure, but if they desired to maintain an officially correct attitude with regard to their own notes, in practice they could not ignore the existence of the "black" market. They attempted to buy and sell the notes of their country at the rates ruling for normal foreign exchange, but the pressure of business forced them to conform to "black" market conditions, because if buyers were aware (though they were often unaware) of the conditions ruling in the market they would not pay one pound for twelve German Marks if for the same money they could get twenty-five German Marks at the bank round the corner, even if the seller explained that this was the normal rate and he declared himself willing to repurchase the unspent balance at the rate ruling in the foreign exchange market. Obviously there cannot be two widely different prices for the same article in one market if there is knowledge of the conditions. The "black" note market was a fairly narrow market with comparatively few operators, the margins tended to be wide because the risk of fluctuation was great and some compensation for loss of interest had to be taken into account. But for the exchange restrictions it would never have come into being at all, and although in one sense it must be regarded as the near relation of the normal note market, which to some extent it displaced for the dealings in restricted currencies, it was nevertheless a completely separate market. Its dealings were as legal as those of unauthorised dealers in stocks and shares, and its usefulness must be measured by its capacity to satisfy demand for restricted foreign bank notes, for whenever there was a demand it did not go long unsatisfied, even when that satisfaction meant trafficking in smuggled notes. That the supply of some currencies was large is clear from the nature of the depreciations.

The rates at which business was done would at times vary considerably. It depended on the nature of the currency in question (and on whether the deal was for notes that could not be legally imported into a country, such as German Mark notes or large Italian notes), and on the available supply of it. Sometimes the difference between the prices of notes that could not be legally imported (which officially were worthless) and those of smaller denomination that could be freely imported, was so small as to be negligible. This reflected to some extent the ease with which the banned notes could be reintroduced into the country where it is to be understood they were legal tender, and enhanced the demand for them. At other times the margin would be wide, a difference of fifteen points, as for instance in small Italian notes, quotation 133, large Italian notes (restricted), quotation 148. This meant that the demand for large notes was weak and the risk of reintroducing them into Italy was thought to be correspondingly greater. At one period during the market's history a wholesale coffee merchant in the City, who described himself as a merchant banker, introduced himself into the market as a seller of German silver coins, and for some considerable time he was able to supply fair amounts to the "black" market. Where his supply came from was a mystery.

The market was localised, that is, the rates ruling in the London "black" market had often no relation to those ruling in the Paris " black " market for the same foreign notes on the same day. The influence of local demand and supply was paramount ; arbitrage operations were not easy nor always practicable, although there was intercommunication and dealing between the markets at times. The differences in the rates for notes ruling in the London " black " market were soon smoothed out by enquiry, the telephone and competition. No market price lists were published, but from early in 1938 the *Financial Times* published a list furnished by a City money dealer twice weekly. This was some sort of recognition of the "black" market's existence. This list, an example of which is here reproduced, is not, like the foreign exchange list published daily in the financial columns of the Press, a list of prices giving the highest and lowest rates at which business was done on the previous day, but a list of prices at which Mr. Margittai, the bank note dealer in question, was willing to buy and sell the notes mentioned. This, however, reflected to some extent the state of the " black " market for bank notes and might serve as a guide to the trend of the market for prospective buyers and sellers. The foreign exchange list for the same day and for the same currencies is appended, so that comparisons may be made and the depreciations of the respective currencies observed. Mr. Margittai gives only one rate for Germany, and it is presumed that it refers to German silver coins, but the market dealt in German bank notes as well, and they were always much cheaper because of the greater risk of reintroducing them into Germany. It is interesting to note the extent of the depreciation of the different currencies ; those most in demand, such as the Italian, German, Hungarian and Yugoslav notes, show marked depreciations. But it must be remembered that in the case of Germany, Registered Marks were quoted on the same day at 34 and that this reflects strongly the unfavourable political situation at the time and the threat of war. The market was very sensitive to political movements, more so than the foreign exchange market, because any disturbing factor reacted more quickly as the demand for foreign notes is mainly for tourist purposes, and at the least sign of political unrest that traffic stops very suddenly. Thus it can be seen that the relationship of the foreign exchange rates to the " black " market note rates is only nominal. Wide margins were usual on account of the risk of holding notes, fluctuations were violent and depended on the demand and supply which in its turn was strongly influenced by political factors.

RESTRICTED BANK NOTES

The following London prices of foreign bank notes subject to certain restrictions are supplied by Mr. A. Margittai, 4, Angel Court, E.C.2.[1] Prices are per £ sterling except where otherwise noted :—

		Buyers.	*Sellers.*	*Foreign exchanges same day.*
Brazil	Milreis	2¼d. each	2⅜d. each	2⅝d. each
Bulgaria ..	Levas	670	630	370–400
Czechoslovakia ..	Crowns	430	410	136½
Chile	Pesos	170	150	—No quotation
Danzig	Gulden	34	30	24⅝–25⅛
Estonia ..	Crowns	19½	18½	17¾–18¾
Germany ..	Reichsmarks	34¾	34½	11.66–11.67
Greece	Drachmae	640	600	540–555
Hungary ..	Pengoes	39	37½	23¾–24¼
Iceland	Crowns	35	32	——
Italy	Lire (large)	145½	144¼	88 15/16–89 1/16
Italy	Lire (small) (100's, 50's and 10's)	142	140½	
Japan	Yen	8d. each	8¾d. each	1/1 31/32– 1/2 1/32d. per Yen
Latvia	Lats	32	30	24¾–25¾
Lithuania ..	Litas	49	46	27½–28½
Poland	Zloty	34	33	24⅝–25⅛
Roumania ..	Leis	1500	1450	650–670
Russia	Tchervonetz	3/9 each	4/3d. each	24.81 (approx.)[2]
Spain	Pesetas (large)	117	112	42¼
Spain	Pesetas (small)	120	114	
Turkey	Turkish pounds	9½	8⅝	585[3]
Yougoslavia ..	Dinars	340	330	205–215

The emergence of a counterpart to the "black" note market in the restricted countries is worthy of notice, as it confirms to some extent the valuation placed upon the notes in the "black" markets outside the restricted countries. Clandestine markets confined mostly to small groups of individual dealers sprang up for the purchase of the unrestricted currency notes, such as pounds, dollars, Swiss francs and French francs. The shortage of these free notes in the restricted countries placed a heavy premium on them. That there was a shortage of free foreign notes in the restricted countries was supported by the fact that the German Government prohibited almost all foreign travel, and that Italian nationals had to obtain special permits to export on their person the equivalent of 2,000 Lire (roughly

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[1] This list appeared in the *Financial Times* on the 11th July, 1939.

[2] This quotation is Roubles to £.

[3] This quotation is Piastres to £.

£20), although these restrictions were framed to protect their reserves of foreign exchange in general. They were often given this sum made up in dollars, Swiss francs, pounds and French francs, in proportion as the banks had such notes in their tills. Buying free currency notes at unofficial rates was illegal in the restricted countries; the buyers, therefore, ran a considerable risk. Contact with prospective sellers was made in various ways, often through the intermediary of hotel employees, and the price became a matter of private negotiation, so that a market in the sense that we have described the "black" market in London did not exist. But nevertheless such dealings went on underhand and prices paid for free notes in the restricted countries varied a good deal.

The outbreak of war put an end to travel in German occupied territory and to tourist traffic as a whole. Further difficulties, however, in the shape of our own finance regulations whereby a permit to export notes was now required, reduced operations to a minimum. The imposition of the censorship reduced the opportunities of exporting notes through the post. The entry of Italy into the war and the collapse of France sounded the death-knell of the "black" market for foreign notes. It is significant of the reduction in the volume of business that Mr. Margittai's list ceased to be published as from the outbreak of war.

It remains for us to examine the significance of the "black" note market in general and its relationship to the foreign exchange market proper. To do this adequately statistics of the volume of business transacted are indispensable, but such statistics are very difficult to obtain, and there are no published figures available relating to the transactions of the "black" note market. When the authorities have a complete monopoly of foreign exchange operations such a monopoly exists in theory, but in practice a "black" market for clandestine dealings always arises. Experience has shown that all efforts towards the total suppression of these "black" markets have failed, though in some countries their significance has been much curtailed. The success of restrictions depends upon the strictness of sanctions imposed upon those who attempt to evade them, and no system, however good, is sufficiently watertight to exclude the dealer with courage enough to take the risks involved, provided he can see a profit commensurate with the risk.

And so long as this spirit is abroad and there are countries that permit a limited import and export of bank notes the creation of "black" markets is assured. The foreign exchange market proper exerts very little influence over the "black" note market; the link that tied the foreign exchange market to the normal free note market is no longer present and for all practical purposes the foreign exchange rate acts only as a guide or basis of valuation for the bank note dealer in the "black" note market. In view of the heavy tourist traffic to most of the exchange restricting countries from 1933 to 1938 it may be said that the operations of the "black" note market were not inconsiderable.

The Two-Part Tariff

FURTHER NOTES BY AN ELECTRICAL ENGINEER

By R. B. Rowson

It is so seldom that the economist condescends to write an article which deals with matters of direct importance to the public utility engineer that one hesitates to criticise in case it may damp future efforts in the same direction. Mr. Lewis is, however, so critical of the electrical engineer's efforts in making and applying two-part tariffs that I think some reply is called for.[1]

To start with, the engineer might well ask Mr. Lewis how his article is to help him in his very difficult task of fixing tariffs and would no doubt get the usual reply that this is "pure economics", and thus justify Barbara Wootton's *Lament*. Alternatively, he may be bolder and say, "I have shown that (*a*) supplies used on the 'peak' must carry all the standing charges, (*b*) the follow-on rate should not be less than marginal costs, and (*c*) provided that the fixed charge does not exceed the consumer's surplus this form of charging is not against the public interest." The first statement is open to criticism and the last two don't help a great deal.

From the first part of the article one would think that the unfairness of charging consumers for their demand on the basis of the demand set up whenever it occurs is not generally appreciated. If, however, Mr. Lewis would refer to discussions in the journals of the engineering institutions he would find quite a body of opinion thinks otherwise. For example, the writer of the book on electricity tariffs to which Mr. Lewis refers had a similar impression, as will be seen from his paper, *Journal I.E.E.*, Vol. 86, p. 329. The discussion shows, however, that many undertakings have for a considerable time been making use of time switches, etc., in order to disconnect the maximum demand indicator during slack periods. Then, in spite of what Mr. Lewis says, the Central Electricity Board tariff also gives partial effect to this principle, as it is based on the undertaking's demand during January, February, November and December only, during which months the aggregate demand on the Board reaches its maximum. Due, however, to the way in which the time of the peak period shifts it is somewhat difficult to base contracts on this method of charging. For example, as a result of the growth of the cooking and heating load relative to lighting and power, the peak has, in many cases, moved to the early morning and in other cases to round about 12 noon.

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[1] See Economica, Vol. VIII (1941), p. 249: "The Two-Part Tariff," by W. Arthur Lewis.

Another difficulty is that theoretically there is only one half hour in the whole year when, on this basis of charging, it is necessary to register the demand set up. In the nature of things this half hour cannot be known until it occurs, and thus with the best will in the world it is not possible to advise the consumer of the exact half hour during which he must be economical. If Mr. Lewis had some better solution than applying diversity factors to get over these difficulties the engineer would be very grateful.

What is of more importance is to know the charges to be made during peak and slack periods respectively. By arguing from the analogy of cotton seed and linters (as a change from the more usual mutton and wool) one discovers that the whole of the standing charges are attributable to the peak load, and by inference, should presumably be distributed over the peak users. In other words, the by-product may be sold for "what it will fetch", provided this price exceeds the slack period marginal cost. The application of this principle tends to lead to chaotic conditions. The early supply systems were established chiefly to supply lighting, a load which results in a slight peak whilst people are getting up, and another and much larger one round about 6 p.m. Faced with this position, someone thought of also selling current for cooking and heating—which were thought to have their demands at other times than lighting. A paper was read before the British Association in 1911 (E. W. Cowan) in which similar arguments to those used by Mr. Lewis were put forward and the stage was set.

Things went on all right until two things happened. As the demand set up for cooking is many times that required for lighting, the cooking peak gradually overtook the lighting peak even with the low saturation of cookers generally obtaining. Also people discovered that the low rates offered rendered room heating an economical proposition, and many undertakings experience an enormous increase in demand whenever a cold snap occurs. (See *El. Times*, 13th August, 1936, and 5th, 12th, 19th January, 1940.)

At the rates usually quoted very little, if any, of the standing charges are covered by these supplies. The economist's answer is presumably that lighting is now the supply given during slack periods, whilst cooking and heating is that given in peak periods, and as a consequence the tariffs should be reversed. It will be admitted that such a policy would be disastrous and would cause a public outcry. The consumer has purchased his cooker or fire on the assumption that the tariffs in force for the supply would continue to be offered.

That such a position has arisen makes one wonder whether the doctrine of " joint costs " should be applied to the on- and off-peak production of electricity. The present tendency to restrict joint cost theory to cases where the production of the main product involves, of necessity, the production of the by-product helps considerably. In the case of electricity supply such necessity is absent. Two plants could be used, one for the slack demand supplies and the other for the peak demand supplies. To a small extent this proposal is made use of in the " change circuit " system. Here a separate l.t. network is used for supplying heating, etc., and the voltage of this system is varied to increase or decrease the quantity of load supplied. In general, however, it is cheaper to use the same transmission system for both supplies. Also there is no need to provide slack period supplies unless the undertakers so wish. In several important details, therefore, the production of electricity is very different from that of cotton seed and linters.

From the practical aspect more cogent arguments can be put forward. Consider, for example, a system supplying two consumers *A* and *B* having load curves as in Fig. 1. On the joint cost argument, consumer *A* has caused the peak and should presumably pay the whole of the standing charges. It is manifestly unfair that *B* should have the use of the system for the rest of the day for nothing. Now assume conditions alter to those in Fig. 2. Presumably *B*, being second comer, should now pay standing charges on

Fig. 1

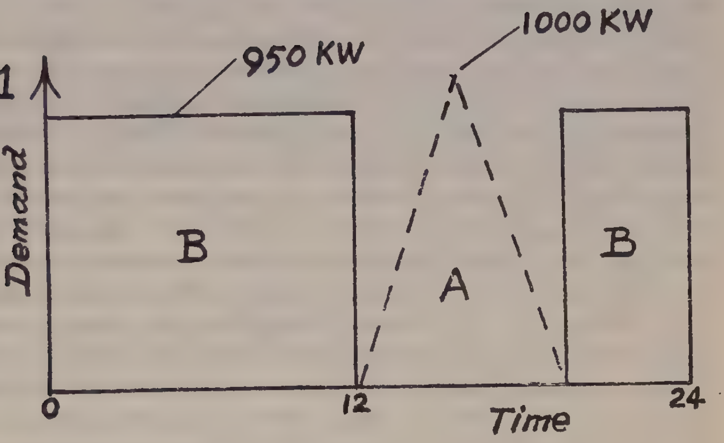
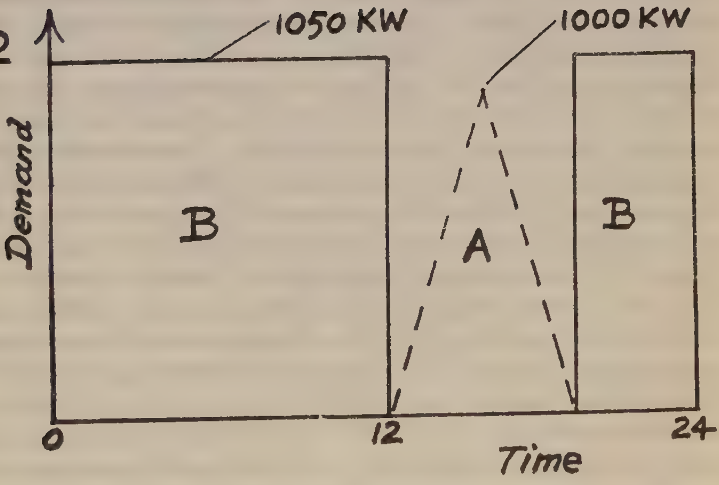

950 KW
1000 KW
Demand
B
A
B
0
12
24
Time

Fig. 2


1050 KW
1000 KW
Demand
B
A
B
0
12
24
Time

50 kw., whilst *A* continues to pay on 1,000 kw., or is *A* relieved of all his standing charges? (See also the writer's remarks in *Journal I.E.E.*, Vol. 82, p. 598.)

So far as the writer is aware, no very comprehensive theory has been worked out by economists on this matter, though it is referred to by Batson in *Public Utilities in Germany* and in Havlik's book, *Service Charges in Gas and Electric Rates*, to both of which Mr. Lewis might have referred his readers. In the absence of guidance engineers have made various attempts to arrive at more or less satisfactory solutions for allocating the charges between consumers (e.g. Hills, *El. Wld.*, January 22nd, 1927, p. 198; Greene, *ibid.*, November 7th, 1925; Knight, *ibid.*, 1926, p. 495). Returning to Fig. 1, it does appear that *B* should pay some of the standing charges in view of the period of time he uses the system, and it seems reasonable to conclude that his charge should have regard for this. As the units sold are, for a given demand, a function of time, it is reasonable to include this part of the allocation in the unit price.

We are still left with the difficulty of allocating the remainder of the charges. Similar difficulties arise in fixing charges under the 1926 Electricity (Supply) Act. A line may be used for giving supplies to two undertakings only and it is necessary to allocate the capital charges on this line between them. Though it is unlikely, we might assume their load curves are similar to those in Fig. 1. If *A* were to pay the whole of the charges he would be in a very adverse position compared with *B*. The solution officially adopted is to spread the charges in proportion to the demands, irrespective of when they occur. Though the disparity of the charges is not so great as spreading on "peak responsibility", it seems hardly fair that *B* should be able to use the asset for so many hours more than *A* without paying something for doing so. In the particular case cited the discrepancy is reduced, as in fact undertakings usually have very similar load factors. But this is not the case as between an undertaking's consumers. Individually their load factors may vary from 10 to 40 or 50 per cent. and as a consequence to allocate on the basis of the summated demand unduly favours those with high load factors and gives no inducement to those who will voluntarily keep their demands off the system peak.

This last sentence raises another distinction which should not be overlooked. In practice the peak demand is due to the use being made of the supply by a number of consumers who have no option but to use it at that time. Likewise a large part of the slack period demand arises from consumers who, due to physical or social necessity, must take supplies at these times. In both of these cases the consumer has no option but to take supplies when he does so. In view of this there is some argument for saying that the charges made to either of them should be the same, as it is fortuitous as to which causes the peak. Both of these classes should be sharply contrasted with the consumer who is willing to go to some trouble to take his supplies during the slack periods and also agrees to alter his times of use to fit in with any alteration in the hours when such periods occur. But even this consumer should not, it is suggested, pay less than the 100 per cent. load factor average cost of a supply from the system, as this is the lowest cost at which a plant specially constructed for him and used under perfect conditions could produce the supply.

It might be said that, boiled down, the foregoing arguments merely state that costs and prices cannot be the same. But in the long run, as has been said by Ripley in the somewhat parallel case of railway charges, it is necessary somehow to get away from the " what the traffic will bear " principle and find a perhaps artificial but logical method of allocating standing charges between different consumers. As an alternative, the escapist reply might be made that the joint cost theory is right and the practical difficulties which arise are merely sociological and thus do not come under the purview of the economist. But a costing theory which leads to such inequitable results is surely not the last word. Perhaps a new approach could be made by regarding the whole thing as a collective enterprise formed to make available some service such as electricity or gas which the individual members all want, some for power, some for heating and power, and others for both these and other requirements.

From the practical aspect, too, a well-established theory would considerably assist public utilities in their relations with the public. After having paid, say, £2 for a ticket it does not make one feel kindly disposed towards the Railway Company by reflecting how one has been taught that the marginal cost of transporting you is 6d. or 1s. A general and well-established theory showing that to charge on short-time marginal costs is almost impossible, and at the same time indicating logical reasons and bases for allocating standing charges, would stimulate useful criticism and I think enhance the prestige of economists.

In the foregoing only those standing charges varying as the peak demand have been considered. Certain other costs, such as meter reading, the capital charges on the services, etc., can best be allocated on a consumer basis. This being so, there is considerable argument for saying that a three-part tariff is preferable to a two-part tariff. Conversely, though the item of consumer costs cannot be allocated fairly on the basis of a flat rate per unit, there are grounds for arguing that for particular classes of loads a flat rate is preferable to the two-part tariff. Observations tend to show that in the case of electric cookers the demand set up on the peak of the local network and on the main system peak increases as the consumption of the cooker increases. A two-part tariff in which the follow-on rate is constant and is based on marginal costs would hardly meet this case, whereas under a flat rate the consumer's contribution to the standing charges would automatically be increased in proportion to his use, though not necessarily in the correct ratio to his increased demand. With electric fires, however, the same argument does not apply as the diversity depends on the weather.

In conclusion, it is hoped that the above notes may stimulate fresh thought on one of the most complicated problems affecting the electric supply and other industries in which a large proportion of the costs is in respect of capital charges.

The Two-Part Tariff: A Reply

By W. Arthur Lewis

Mr. Rowson's comments, and criticisms which I have received from other sources, show that it is desirable to expand the analysis of peak and off-peak cost contained in my original article, since the principles involved are by no means as widely understood as I originally thought.

There is no doubt that the appropriate technique for analysing this problem is the theory of joint costs. Where the same equipment cannot be used for peak and off-peak supplies this is not so, but usually, even allowing for time necessary for overhauls, the same equipment can serve both purposes. At one point in his paper Mr. Rowson seems to wish to deny that electric supply is a case of joint costs, but he immediately retracts by admitting that it is usually cheaper to use the same equipment for both purposes.

In order to elucidate the problem, let us consider once more the allocation of the cost of growing the cotton plant, which yields both fibre and seed. I choose this example rather than mutton and wool not, as Mr. Rowson seems to think, for the sake of doing something "unusual", but because the latter does not present a true parallel with peak and off-peak supply since it is possible to vary the proportions in which mutton and wool are produced.

Suppose, to begin with, that there is no demand for seed whatever; it follows that the whole cost of the plant must be recouped from the sale of fibre. Then suppose that there springs up a demand for seed which increases steadily. At first the quantity of seed already being produced in consequence of the demand for fibre will exceed the demand for seed. In a competitive market the seed will be sold at a price which only just covers the special costs of recovering it, which for convenience let us assume to be zero. Despite the fact that some seed is being sold, the entire cost of cultivation falls to be contributed by fibre; and this must be so as long as the demand for seed at a zero price does not exceed the quantity being produced in consequence of the demand for fibre. Note too that even a monopolist will allocate the whole cost of the plant to fibre. He will sell the seed at a price greater than zero ; but at the margin his revenue from seed is zero ; if there is any question of putting in an extra plant he knows that the extra seed will be of no use to him, and even though he is obtaining revenue from selling seed he will only put in the additional plant if the marginal revenue in the fibre market will exceed the marginal cost of the plant. It is important to note this because failure to note it is a cause of some confusion in analysing peak and off-peak costs. Even an electricity concern acting monopolistically and able to extract revenue from its off-peak consumers is not justified in putting in additional equipment unless the whole cost can be met from additional sales at the peak.

But to return to fibre and seed. As the demand for seed grows there comes a point where at zero price the demand just equals the supply available. At that point there ceases to be " excess capacity " in producing seed. If the demand continues to increase, we can no longer attribute the entire cost of the plant to fibre. In a competitive market the price of seed will rise and the price of fibre simultaneously fall ; the contribution of each to costs will depend solely on demand. Note too that if the demand for seed still continues to increase there will come a point where the price of fibre falls to zero because the amount of fibre produced to satisfy the demand for seed exceeds the demand for fibre. At that point and thenceforward the price of seed must cover the whole cost of the plant. There are three stages to the process : a stage where the whole cost is attributable to fibre, a stage where the whole cost is attributable to seed, and an intermediate stage where cost allocation depends on demand.

The fact that there is this intermediate stage is ignored by Mr. Rowson, but it provides the answer to some of his problems. Thus he points out that originally the whole capital cost of electricity was charged to the peak use, lighting, and that in consequence its off-peak use for cooking increased until the demand for current for cooking in many cases exceeded the capacity of the lighting equipment to supply. He continues : " At the rates usually quoted very little, if any, of the standing charges are covered by these supplies. The economist's answer is presumably that lighting is now the supply given during slack periods and cooking that given in peak periods, and as a consequence the tariffs should be reversed." This is not the economist's answer. It is an answer which assumes that the full cost must be met either by lighting or by cooking. It ignores the intermediate stage in which by adjusting the relative prices of supplies at different times of the day it may be possible to eliminate peaks and to keep the equipment continuously fully occupied. The true answer therefore is that as soon as the cooking demand has grown to equality with the lighting demand, the cooking price should be raised and the lighting price lowered, and such adjustments made from time to time as are necessary to keep the two equal to each other. In this stage no allocation of costs is possible. If additional equipment is installed, it will run continuously supplying both more cooking and more lighting; and so long as the additional revenue from these jointly covers the additional cost the installation is justified. Only when the demand for cooking is so strong that the cooking demand would still exceed the lighting demand if the cooking price were high enough to cover the whole capital cost, and the lighting price so low as to exclude any capital element—only then would the economist say that the whole capital cost is attributable to cooking. Before we can enter into the third stage, we must first have passed through the second. This, too, is the answer to Mr. Rowson's diagrams about *A* and *B*. Thus in Figure I the economist does not say that the whole capital cost should fall on *A* because his maximum demand is greater. We cannot say how capital cost should be divided between them until we know how they would react if different prices were charged at different times. The aim of the concern should be to have its equipment running continuously. Perhaps if *B* were charged slightly less than *A* his maximum demand would expand and catch up with *A's*. The price to *B* should be lowered, and the price to *A* raised. If both have inelastic demands *A* will find the price rising higher and higher against him. Only if his demand is so urgent that it cannot be contracted, and *B's* so inelastic that it will not expand sufficiently—only in this case will the whole cost fall on *A*. But it is quite possible that we are in the intermediate stage where some combination of prices will keep the equipment continuously occupied, with both sharing the capital costs.

There is another of Mr. Rowson's problems which is a problem only because he ignores the intermediate stage. He says: "Theoretically there is only one half hour in the whole year when, on this basis of charging, it is necessary to register the demand set up." This implies that I have argued that the whole capital cost must be met by the people who take current in that half hour. The answer to this is simple. Variations in the daily peak are like variations in demand during the day. The aim is to have the equipment fully occupied continuously. In some months demand is strong, in others it is weak. Prices ought therefore to be adjusted so that there will be a high peak price in some months and a low peak price in others. If we are in this second intermediate stage there will be some combination of high and low prices which will make all the daily peaks of the same size. But suppose that there is one day in the year when the strength of the demand is enormous. Then it may be that we find ourselves in one of the extreme stages; we find, that is, that even if all capital costs were crowded into the charge for supplies in that half hour, and current allowed free of capital charge all the rest of the year, still the demand for current in that half hour at that high price would be greater than the demand throughout the rest of the year. Then it will be true that the marginal cost of supplies in that half hour will be the whole cost of the equipment. Any equipment installed then will be of no use at any other time in the year, because there is already excess capacity at these times. Only if a consumer needed the extra current in that half hour so badly that he was prepared to pay a price covering the entire annual depreciation quota of the equipment would the concern be justified in installing it. Now clearly this is a most improbable situation. The variations in daily peaks exist because prices are not properly adjusted, and because of that lack of adjustment some consumers are getting current at less than the marginal cost of supplying them. If prices were adjusted from month to month, peak demand would possibly be constant from month to month. But maybe in one or two months even a price with no capital contribution would not bring the peaks up to the level of the other months; then in those months peak and off-peak prices would be the same;

the capital cost would be levied on the other months, whose prices would be so adjusted as to keep their peaks at the same level. In practice of course such close adjustment as this analysis demands is impossible, but if an attempt were made to approximate to it, the variations in monthly peak demand would be considerably less than they are at present. Some concerns do vary their prices seasonally.[1]

Outside the intermediate stage we are in the ranges where some equipment must lie idle even if off-peak demand is charged a zero price,[2] and the whole cost charged to peak demand. In such ranges the whole cost ought to be charged to peak users. To many persons, including Mr. Rowson, this seems unfair. Even Professor Pigou, usually so sure a guide in such matters, considers that the off-peak users should be made to pay some part of the cost.[3]

Everybody will admit that marginal cost in the off-peak includes no element of capital, and that if additional output is to be supplied at the peak, it must be charged with the full amount of the extra capital cost. If we apply the simple rule that price should equal marginal cost, the off-peak charge will contribute nothing to capital cost; the units of peak supply will between them pay the whole of the capital cost.[4] Objections to applying this rule must take one of two forms, suggesting either that price should differ from marginal cost, or that average and marginal price should not coincide.

Professor Pigou's proposal is in the first form. He writes:

> " In order that it may be possible to provide the current required at ' the peak of the load ', a large quantity of equipment must be erected additional to what would be required if there were no hours or seasons of exceptional demand. Let us suppose that during one-fifth of the

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[1] A similar analysis is to be applied where there are two peaks in the day, one in the morning and one in the afternoon. Outside those peak periods the price will not include any capital contribution. If by adjusting relative prices of the peak periods it is possible to equate the peaks, the capital cost will be shared between them. Only if no appropriate combination of prices will equate the peaks, will the whole of the day's depreciation quota fall on only one of them.

[2] I am ignoring the existence of prime costs. This accounts for the slip on page 251 of the original article, line 17, where I have written " price greater than zero " in a context where I should have written " price greater than prime cost."

[3] *Economics of Welfare*, 4th Edn., page 294.

[4] See the first footnote on page 251. The whole discussion in the first section of the article is on the assumption that peak capital costs vary directly with output. The recovery of capital costs where average cost is falling is dealt with in the third and fifth sections of the original paper, and in the second section of this one.

> time 2 million units per hour are wanted and during the rest of the time $1\frac{1}{2}$ million units, and that, in consequence, the equipment costs $\frac{4}{3}$ times what it would have done had $1\frac{1}{2}$ million units been required always. Then the real cost of the peak-load current, so far as it depends on cost of equipment, can be calculated as follows: the equipment cost of producing the units needed in the aggregate of off-peak times is $\frac{4}{5}$ times $\frac{3}{4}$ths (i.e. $\frac{3}{5}$ths) of the total equipment cost, and the equipment cost of producing the units needed in peak times is $\frac{1}{5}$ times $\frac{3}{4}$ths of the total equipment cost, plus the whole of $\frac{1}{4}$ of that cost, i.e. $\frac{2}{5}$ths of the whole."

Professor Pigou gives no reason for putting forward this novel method of analysing the problems of joint supply. Applied to the case of cotton fibre and seed it would yield the following result. Suppose that there are 1,000 plants, that the whole fibre product is consumed, but an amount of seed equivalent to the product of 300 trees goes to waste. On this analysis we divide the cost of 700 trees equally between fibre and seed, so that the cost attributable to seed is $\frac{7}{20}$ths of the whole. As in the competitive market seed would contribute nothing, here at first sight is another case to delight those contemporary economists who rejoice in finding reasons to show that the competitive system causes a misapplication of resources. Unfortunately for them the fault lies in the analysis. Let us see what would happen in Professor Pigou's example if costs were divided so that the peak consumer paid only $\frac{2}{5}$ of the capital cost. Clearly he would extend his peak consumption beyond the quantity he would take if it were charged the whole cost. The undertaking then has to increase its equipment. Maybe if it is a monopolist it will be able to levy some contribution from the off-peak consumers. But the additional installation does not enable them to consume any more than they were taking before, since there was already excess equipment to supply them. The peak consumer alone is responsible for involving the concern in extra cost, but he is getting away with paying only two-fifths of it. Peak output will therefore exceed ideal output. Similarly off-peak consumers can increase or reduce their consumption without affecting the capital costs of the concern; but they will be discouraged from increasing their consumption by being charged a price covering $\frac{3}{5}$ths of the undertaking's costs. Off-peak output will therefore be less than ideal output.

This difficulty can be avoided, it may be thought, by having a difference between the marginal and the average price paid by the consumer. If capital cost is levied on the off-peak consumer by a fixed charge, he can be allowed to take his units at a variable price which includes no capital contribution. This, to some people, is the attraction of the two-part tariff. But the two-part tariff does not really meet the necessary conditions. The tariff we require is one whose marginal price is different at different times; includes capital contributions at the peak but not the off-peak; and is such that a consumer who takes only at the peak will pay an average price smaller than his marginal price, while the consumer who takes only in the off-peak will pay a marginal price less than his average price. The two-part tariff does not meet this because its marginal price is the same at peak and off-peak. In the original article I pointed out on page 255 that the two-part tariff is not ideal for allocating peak costs, precisely because its low marginal price stimulates excessive peak consumption. Mr. Rowson's remark about the electric cooker in his penultimate paragraph is merely a different illustration of the same point. But even if we could devise the complicated type of tariff called for, there is still another obstacle which it does not pass. Consider a new customer contemplating coming on to the peak. The additional costs in which he will involve the undertaking will on our assumptions be exactly proportional to the amount he takes. The price quoted to him ought therefore to be such that his bill will vary directly with the amount he takes. Or consider a new customer coming on in the off-peak season. His income elasticity of demand is not zero. If he is charged any fixed sum he will be paying to the concern more than the additional cost of supplying him, and he will consume less than he would if charged only marginal cost. On our assumption that costs vary directly with peak output, average and marginal price should coincide.

There is a muddle in some people's minds because, like Professor Pigou, they feel that peak output ought to be separated into (*a*) an amount equal to off-peak output, plus (*b*) additional output only at the peak. It is tempting to analyse the problem by thinking first of one group of customers who take steadily at the same rate throughout the day, and then adding to them a second group who "cause" the peak. But this is misleading. The peak is not caused by one group of persons rather than another. It is caused by everyone who takes at the peak, in proportion to the amount he takes. Every peak consumer is the marginal consumer. Whether he was already a consumer in the days before there was any peak or not, is irrelevant; what matters now is that if he ceased to be a peak consumer now costs would fall by the full amount of the capital no longer required. Whether he takes only at the peak or also in the off-peak is equally irrelevant; and so is Mr. Rowson's suggested division into those who must take at some particular time and those who need not. If any consumer at the peak curtails or increases his demand, capital costs will vary in proportion. Therefore the price charged to each peak consumer should include the full capital cost which is involved in any decision he makes. And if this is done, the full capital cost will be recovered at the peak. I am sorry if Mr. Rowson thinks it inequitable to charge a man according to the costs which his decisions impose. Certainly I cannot accept his invitation to construct a special theory to show that some other policy should be adopted. Even in these days there is something to be said for the view that the way to deal with a "public outcry" is to accustom the public to face the truth.

A final word before leaving the peak. Mr. Rowson complains that my article suggests that engineering writers do not realise that in allocating peak costs the load curve of the individual consumer is irrelevant. What I actually said (p. 252) was that the better writers accept this point, but that in the industry this method continues to be used and recommended. Even Mr. Rowson's position seems to be uncertain, for he tries to justify the Central Electricity Board's use of individual maximum demands by saying that only winter demand is taken into account. But surely this is no justification. The method could only be justified if there were ground for thinking that in winter individual maximum demands stand in the same ratio to each other as individual demands at the time of the system's peak.

II

This peak and off-peak problem must be sharply distinguished from two cases which Mr. Rowson raises. Its necessary assumption is that capital costs vary with peak output, and it must be distinguished from the cases where additional output can be supplied even at the peak without additional capital cost. Thus he refers to the case where a line is used for giving supplies to two undertakings and it is necessary to allocate the cost between them. He refers also to railway costs. The essence of these two cases is that within the relevant ranges marginal capital cost is zero. If customers were charged only marginal cost the undertaking would go bankrupt. Here we must face the fact that there is no scientific principle on which to allocate the capital cost. Some suggest that it should come out of general taxation, some suggest a two-part tariff, others rely on charging what the traffic will bear. The only guide economics can furnish is that no capital charge should be included in the *marginal* price charged to the consumer. Charging what the traffic will bear is clearly imperfect from this point of view, the degree of imperfection depending on the elasticity of demand for the more highly priced traffics. The two-part tariff meets this point, but if income elasticity of demand is positive, the consumer will take less than he would if the total bill presented to him only just covered the total amount by which he increased the undertaking's costs. And a subsidy from government funds has to meet the objection that some people pay taxes who are not customers of this undertaking. Which of these methods is chosen must depend on one's view of their relative merits and demerits in each case, including administrative convenience. I am sorry to be unable to accept Mr. Rowson's challenge to enhance the prestige of economists by laying down a positive principle; will he be satisfied at least to have the negative assurance that there is no unchallengeable method of allocation in such cases?[1]

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[1] This problem is more fully discussed in Pigou's *Economics of Welfare*, Pt. II, Chapters XI and XVII, and in the articles mentioned in my footnote on page 269 of the original article. I cannot accept, either, the invitation to enter into the proper method of computing the marginal costs of railways, as this is too far from the main subject. Mr. Rowson's example seems to forget that the railway's unit must be the marginal vehicle and not the marginal passenger, and that since at the peak rolling stock costs vary with traffic, they must be included in computing marginal cost.

III

Perhaps it is as well to end with a summary of my conclusions, which are wrongly stated in Mr. Rowson's second paragraph.

(*a*) Where there are variations in the intensity of demand, equipment will not be continuously occupied unless different prices are charged at different times. If at some times demand is very weak, even a price which just covers prime cost will not be sufficient to keep all the equipment occupied. At such times additional output involves no additional capital cost, and no item of capital cost should be included in the price. The two-part tariff is not an ideal way of dealing with the problem because its marginal price does not vary at different times of the day, and therefore it encourages excessive consumption at the peak. Nevertheless it may in some cases be more convenient than to vary prices according to time of consumption.

(*b*) Whether there are peaks in output or not, a fixed charge may appeal to an entrepreneur who wishes to reduce the number of his outlets: to both entrepreneur and consumer if the cost of measuring consumption is high; or to either the entrepreneur or the consumer or both if it is desired to escape risks of changes in demand or supply. In any of these cases the fact that the marginal price will be less than marginal cost means that output may exceed "ideal" output, but this is merely a cost of obtaining the desired advantage. The cost may be specially important where a concern is trying to tie its customers and keep them away from its competitors; the use of a two-part tariff for this purpose, with a marginal price below marginal cost, is not in the social interest.

(*c*) Whether there is a peak or not, if there are economies of scale marginal cost will be less than average cost. In such a case there is no "scientific" method of allocating to consumers the difference between average and marginal cost. A two-part tariff is one of the methods which can be used, but is imperfect.

(*d*) The only case where the two-part tariff can be claimed to be the "ideal" or "scientific" method of allocating costs is where the fixed charge is exactly equal to special "customer costs". But to say this is not to say that it should not be used for other purposes, as in any given case the disadvantages of using it for that purpose may be outweighed by its convenience.

Professor Mises and the Theory of Capital[1]

By F. H. Knight

Writing a review of this volume has proved to be a difficult assignment. In 750 large and well-packed pages, Professor Mises, a respected veteran of economic warfare and the author of notable works, which have long been widely read, in various divisions of the wide field of economics, now presents a treatise upon it as a whole. He discusses at length the major problems of theory, as now recognised after generations of voluminous controversy. His book itself is highly controversial in substance, and in tone, though the argument is directed toward positions, with very little debate or *Auseinandersetzung* with named authors. In some relation to its controversial character, the content is largely " methodological ", in the broad sense. This is both natural and, in my opinion, proper; for the practical as well as the theoretical issues in economics come down to methodological questions having to do with assumptions, axioms, or " facts ". It is a field in which it is largely the facts, and the meaning of the notion of fact, which are ultimately in dispute; this makes argumentation difficult and inconclusive.

The impression, it must be said, is not very encouraging as to the state of economics and the prospect of agreement among its leaders on " fundamentals " of pure science or theory, or on the relations of these to intelligent social economic policy. This impression of the book on the reviewer will tend to be reflected in a more accentuated form in the review itself. It is one of a somewhat weary, slightly impatient and dogmatic " rehash " of issues already worn threadbare with argument pro and con, argument which hardly seems to tend toward any result or end. In part this impression is connected with the present situation in the world of action. The course of events threatens to take out of the hands of peaceful discussion issues on which the supposedly competent and impartial specialists seem rather pitifully unable to get beyond the constant rethreshing of old straw. This situation tends to make even a participant in the discussion sympathetic with the attitude of the plain man and the practitioner. Such philosophic argumentation has something of the air of futility. Either it must somehow be out of relation to the realities, or else those who engage in it lack something essential, or they would at least know where and why they disagree.

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[1] *Nationalökonomie: Theorie des Handelns und Wirtschaftens.* By Ludwig von Mises, Geneva, Editions Union, 1940. xvi, 756 pp.

It is not that I, personally, tend predominantly to take the other side, against the position of Professor Mises, on the issues which he discusses. On questions nearest to concrete problems of action, the contrary is rather the case. I am in cordial agreement with him in being " conservative " with respect to most of the recent and currently touted revolutionary innovations in economic theory, as well as conservative on the fundamentals of social policy. An exception is the field of money, and *Konjunktur* or cycle phenomena, the field where the problems which especially threaten our whole free economic system arise and have their centre. I agree with Professor Mises' view that depression, or the " cycle ", is fundamentally a phenomenon of credit expansion and contraction. But much of his analysis seems to me inconsistent and contrary to facts. However, I also find it obscure, and concede that my impression might be modified by more intensive study. He seems opposed to government having any monetary policy —which is surely carrying his well-known anti-interventionist attitude to extremes, though the policies which governments adopt must make one sympathetic in the abstract. He seems opposed to monetary " stabilisation " even as a concept—virtually holding that the value or purchasing power of money, and its variability, are without meaning (pp. 208ff., 356ff.), while his general reasoning seems constantly to imply the contrary. (Cf. pp. 500–532, 692–97.) In this whole field I am convinced that conservative theory, correctly interpreted, calls for radical measures. This situation is rather typical ; where I agree with Professor Mises' conclusions, I often find him right for wrong reasons—and reciprocally, right premises being used to support " error ". This is not particularly encouraging to faith in economic theory, or in economic theorists.

It would manifestly be impossible to go through the book and make any pretence of summarizing its argument on major questions, still less to explain the reasons why I personally agree or disagree, either with various conclusions, or with the arguments on which they are based. Any such attempt would be a weariness to reader as well as writer. Rather than select, more or less at random, for brief comment, a few of the hundreds of points which suggest critical observations of one sort or another, it seems more profitable to use the space allowable for a review article to discuss more adequately some one main problem which at once is peculiarly central in the structure of theory, and on which my disagreement with the author reaches down to basic premises and methods. The problem chosen is the theory of capital and interest.[1] It is one in which the relation of theory to action is perhaps peculiarly obscure. If this tends to make the discussion seem remote from present burning issues, it also has obvious advantages from the general standpoint suggested, illumination of the ultimate difficulties of economic theory, and of the reasons why discussion seems so largely to result in multiplication of controversy.

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[1] I cannot resist mentioning the treatment of what is perhaps the ultimate conceptual problem in economics, the nature and content of value theory. Professor Mises insists on treating every individual preference or comparison as a value judgment, and argues that no rational analysis of such judgments is possible in terms which men in general will accept (pp. 52f, 145, etc.), asserting that any discussion of an end depresses it to the level of a means (p. 52). This,

In this field, as some readers of this Journal know, I have been especially concerned to make some constructive and " corrective " contribution, while Professor Mises is equally concerned to defend what may be called established doctrine, the general position of Böhm-Bawerk. He has done me the honour in this book of referring to my work on two occasions as a bad example (p. 446 note and p. 451 note). For my part, I am as sure as I am of anything whatever that the literature of economic thought hardly contains an error more egregious or palpable than the time-preference theory of interest, a more glaring example of ignoring in the construction of theory, facts and axiomatic principles which the authors explicitly recognise in their own discussion and which decisively negate the theory expounded. At the same time, while I have felt for a decade or more that it should be possible to state the essentials of the pure theory of capital and interest at once clearly, conclusively, and briefly, yet in several attempts (one in ECONOMICA—for August, 1933) I have clearly failed to achieve these objectives, or perhaps any one of them. The central position occupied, as I believe, by " capital " in economic life and economic theory, and the place assigned to it in Professor Mises' book, may justify taking advantage of this occasion to " try again ", using the contrast between his position and my own (and between the schools of thought which we more or less represent) as a " test case " of the ability of economists to understand each other, if not to agree, on fundamentals.

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In saying that Professor Mises is a defender of Böhm-Bawerk's theory of capital, it is necessary to introduce at once an important

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I am sure, is true in a formal rather than in a real sense, a sense which is of little more than grammatical import. All communication whatever involves and rests upon and relates to value judgments which are more than preferences, which have " objectivity ". Otherwise all utterance would be merely self-expression, of a private individual state of mind. When we say that a thing is good " because " it conduces, or is a means, to some formal end, we are only saying that it is good because it is good, or wanted because it is wanted. Such statements are parallel to the type of causal analysis represented in the statement of the hypochondriac's doctor in Molière, that opium puts people to sleep because it possesses a dormative virtue. All positive or scientific causality reduces to such statements. And all discussion of values reduces to instrumentalism, if one refuses to look beyond that level, or to recognise the reality of any other realm of discussion.

I should insist that there is another categorical level, namely that of " criticism,", which admittedly is both difficult for thought and lacking in the precision which is to be had in judgments about a subject matter which is objectively measurable. Economic or instrumental judgments in themselves fall in a realm which lies between physical science and criticism—and under critical scrutiny tend to dissolve into one or the other of the two types. This subject would lead into, and is basic for, discussion of the relation between economic theory and action, which certainly demands critical judgments of value, not reducible to instrumental content, as a starting point. But Professor Mises gives practically no attention to the relation between knowledge and action in the economic sphere—an anomaly, surely, since this relation is the core of methodological questions—and the presentation of what seem to me the essentials would run to a philosophical monograph as a minimum.

qualification. He is a defender of the general theory or principle which Böhm-Bawerk announces as the meaning of capital and the basis of interest, namely that men place a higher value on present than on future goods or satisfactions (cf. p. 438 and Index s.v. *Urzins*). Böhm-Bawerk himself, as readers will recall, gave three grounds for this preference. The first ground, the relation between want and provision for want in present versus future, is here definitely repudiated —quite rightly as I believe. With Mises' statement of the reasons I would not agree in all details, but the differences are not important enough to justify taking the space to go into them. More important is the fact that Mises definitely rejects the third ground, the famous superior productivity of roundabout technical methods of production (*Mehrergiebigkeit der Umwege*) which Böhm-Bawerk himself finally made the basis of his own theory of capital and interest, in all the latter part of his work. He (Mises) will have nothing to do with the " productivity " theory of capital in any form, including explicitly that of Böhm-Bawerk, as the basis of interest. (Especially pp. 477, 480.) Thus the position which he actually defends is that of Böhm-Bawerk's first ground (later ignored by him) which makes the preference in question an ultimate fact of preference (a *Wertung*, in Mises' terminology). This is the theory associated with the name of Professor Fetter (though Mises shows no inclination to call it by Fetter's designation, a " psychological " theory) and which Professor Fetter, and I believe critics in general (and I believe rightly), contrast with " the " position of Böhm-Bawerk.

The alleged " fact " that the preference of present to future satisfaction (*ceteris paribus*) is the sole basis of interest our author vehemently asserts, again and again ; but I cannot find that the view is anywhere " argued ", or that the issue between a psychological (or valuational) time-preference theory and a productivity theory, as I so clearly see it, is anywhere recognised. Again, I agree that such a preference must exist in any world in which there is economic life of approximately the form in which we know it. But here in particular I find a right conclusion held for wrong reasons. I disagree radically on the meaning of the preference itself, as well as the reason for its existence, and hold that apart from the productivity of investment no assertion could be made about time-preference—correctly defined—as a human trait.

As to the meaning of time-preference, interest theory based on this premise involves a strange confusion. The writers regard the unwillingness of an individual to postpone all consumption to the indefinite future as constituting a preference of present to future satisfaction. In this form, certainly, the principle neither needs " proof " nor admits of any proof. (Mises, p. 443ff., Sec. II.) Indifference to unlimited postponement is identical with indifference to all consumption, and without meaning.[1] A real and meaningful preference of present over future would be manifested in behaviour by a choice of a higher rate of enjoyment now and a lower rate in the future, over a uniform rate, *ceteris paribus*, i.e. the total being given and freedom allowed as to the distribution in time. It would be measured by the excess of the inducement or premium required to get people to consume more in the future than in the present, over the premium necessary to get them to consume more in the present than in the future (*ceteris paribus*). Certainly no one cares to postpone to-day's meals until to-morrow; but neither would one choose to eat all of to-morrow's food to-day. And obviously, the transfer of increasing amounts of consumption in either direction (from whatever distribution would be preferred by any individual) would encounter rapidly increasing subjective cost, shortly becoming infinite.

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[1] The same characterisation applies to the notion of the uniform distribution of any finite total of consumption through all future time. But as will presently be emphasised, any finite amount of future consumption however small is converted by maintenance of investment into a perpetual stream of some magnitude, which is to say ultimately an infinite aggregate quantity.

In the only world which we know anything about (or even which we can rationally picture) the essential fact is that the choice between present and future is not made under *ceteris paribus* conditions; a premium on postponement is to be had, through productive investment, yielding (in perpetuity) at a rate which is or may be approximately known, though affected by an enormous range of uncertainty in different cases. Under this condition any rational person must prefer present to future wealth, as has been pointed out many times. What a perfectly rational individual would do, under any given terms of choice between present and future, is merely the problem of defining perfect rationality, and close agreement on this speculative question is not to be expected.[1] We know that if men had not postponed in the past some consumption which they might have had they would never have "accumulated" at all, which is to say they would never have progressed, and could hardly have become human in the first place, so dependent is progress upon the accumulation of means in some form. And if any society, as a whole, did not "now" postpone to the future consumption which could be enjoyed now, that society would quickly "eat up" all its "capital" which could be consumed.

We know that modern capitalistic civilisation has presented the phenomenon of rapid accumulation, under the condition that a substantial (perpetual) rate of return on investment has always been obtainable. It is reasonable to regard this return as an " incentive " to saving and investment, hence to the form of postponement actually involved under this condition. But it should be emphasised that no definite conclusion, or particularly no quantitative conclusion, can be drawn as to the relation between the return (" interest ") obtainable and the rate of accumulation.[1] Many factors other than the rate of return obtainable certainly enter into decisions affecting saving and investment (or disinvestment). Accumulation is a characteristic not merely of " modern capitalism " but of any civilisation, in its ascending phase. And decumulation is characteristic of any decadent civilisation. The reasons for decadence present a complex and obscure historical or institutional problem ; it is certainly never due to a society arriving at conditions where productive investment is no longer possible.

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[1] Jevons discussed the hypothetical case of the distribution of the consumption of a limited stock of provisions by an exploring expedition in a region where no more could be had. He came to the reasonable conclusion that rational men would aim at consuming at an approximately uniform rate, on the whole, in so far as relevant conditions were known. As between a rising and a declining trend, the latter clearly seems more in accord with rationality, but this is probably because of contingencies with which life and plans are necessarily fraught (though these count both ways) and other considerations (notably conditions requisite to interesting activity) which really carry one outside the postulates of economic rationality. It would be illuminating to consider the hypothesis of a society in which "productive resources" could not be produced or used up, and where any individual could change the time shape of his consumption stream only through exchange with others affecting a contrary distribution. Under conditions otherwise resembling those of the actual world, the "interest rate" would fluctuate wildly, between large positive and negative values; but the topic is too large for detailed discussion here. And discussion would be not very pertinent, since the main point to be made is that absence of opportunity for productive investment implies a world in which there would be no economic life in anything like the form actually known, or reasonably imaginable.

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We turn now to the more positive and constructive phase of the argument, in which the first step is to " prove " that productivity of investment is a necessary feature of economic life. It is surely an indubitable fact of the actual world, and it might seem that it could be taken as a fact, and argument about its " necessity " omitted. But the demonstration of the necessity is called for, for two reasons. First, it is required in order to show that the universal principle of von Mises, Fetter, and others, that present wealth must be preferred to future wealth, is really a consequence of the universal principle that capital must be productive, that apart from the productivity of investment, we can only guess about time preference. In the second place, a number of reputable economists have contended that a situation in which the productivity of investment would be zero is the natural position of economic equilibrium, the condition to be assumed in a " stationary economy " and that there is a real tendency toward such an equilibrium position.[2]

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[1] When the term " interest " is used in this essay, it is to be understood to mean the rate of return obtainable on investment in some society or " economy " considered as a whole. There is no question whatever of the occurrence or non-occurrence of contractual lending and borrowing, either of useful things or of " value " measured and specified in any unit. For the most part, we shall use terminology which avoids this disastrous confusion of issues, so conspicuous in recent discussion. Under normal conditions the interest rate on any loans that are contracted must tend to close conformity with the productivity of investment. Lending is a rather superficial phenomenon since the same result can readily be achieved by numerous other forms of contract—as shown by medieval evasions of the law against interest-taking.

Abnormal conditions are mostly connected with uncertainty and speculation, especially in the monetary field. Any prospective change in the value of the unit in which future payments are specified will, of course, affect the amounts written into long-term contracts in a simple arithmetical way. Far more important, money presents a form for holding wealth, the value of which is subject to peculiar influences. A prospective fall in its value may act as a powerful stimulus to real investment or a moderate anticipation of " falling prices " may nullify the obtainable return and put a stop to commitments for any distant future, giving rise to " depression "

[2] The economists referred to include, perhaps first of all, Professor Schumpeter, more recently Mr. Keynes and still more recently Mr. Hansen ; also Professor Lange, at least at an earlier stage in his " education " It will later be shown that no equilibrium rate of return is realistically meaningful, but the impossibility of a zero rate will be useful in that argument.

To prove the proposition in question, for practical purposes, it is only necessary to make it clear that opportunity for productive investment could be absent only in a world in which all services of agents which could possibly be produced, including all agencies requiring maintenance, including replacement, would be "free" (If the services are free the agents naturally will be free also.) We need only consider the case of agents requiring maintenance (including replacement), since the proof will obviously apply, *a fortiori*, to the creation of additional productive capacity in any form.[1] The proof is simple. No agent would be maintained at a cost, in the absence of some incentive, which is a return on the cost. The "gross" yield (the imputed service value or rental) of any agent which is not naturally immortal, must be greater than its "net" yield, the difference being the cost of provision for maintenance. Hence if the service has any value (marginal utility) at all, the gross yield must be preferable to the net yield, since the difference will have some value for consumption. In other words, "resources" of limited life will be maintained, in the absence of a return on investment, only if their services are free goods, which means that the resources themselves are not resources in the economic sense. Furthermore: maintenance is in the first place logically identical with (net) investment, as regards motivation; both present exactly the same form of choice between present and future. (To make clear the nature of these alternatives, especially with respect to the time dimension, will be our next task.) In the second place, in any world in which existing resources are maintained at a cost, there will be opportunities for creating new resources—on the same terms as to cost, at the margin, assuming rational behaviour and a free market.[2]

In such a world as this, with a rate of return a "fact" or actually available, all that any individual or any society can do is to save and invest, or disinvest, as the case may be, up to that point at which his preference of present over future, at the margin, is measured by the rate of return. As already observed, either investment or disinvestment is necessarily subject to rapidly increasing subjective cost, in terms of the other alternative; hence, a relatively small change in the rate of investment or disinvestment will cause a relatively large change in the marginal rate of time preference. The demand for future income, at the price of current saving, is extremely inelastic.

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[1] All maintenance consists of replacing some element in a productive agent, hence of some "agent" in the elementary sense. It is a purely arbitrary matter what is considered as an agent, a unit. Any agent, however defined, is a part of a larger complex, and so on in a series, up to the productive "plant" of the world itself, as an "economy". And most units are composed of separately replaceable parts—down to oil for machines and to the tissues of animals—including also human beings. Men are productive agents, and are certainly maintained, by replacement of "parts" and of "individuals", in so far as "capital" in this form is actually maintained. On the other hand, replacement is a detail of maintenance, which is the general category.

[2] As already suggested (*supra*, p. 413 note) it is possible to think of economic life as carried on under still more restricted conditions, without the possibility of creating additional productive resources, or the need of maintaining those already in existence. Under this condition, the balance of time preference might vary over the widest range, from hour to hour.

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We come now to the meaning of the productivity of investment, and especially its quantitative meaning, or its measurement. That is, we have to make clear the nature of the concrete alternatives between which choice is made when an individual or any economy decides whether to maintain the aggregate productive capacity in its possession at any moment, or allow it to decrease through disinvestment (under-maintenance) or to increase it through (net) investment. The choice is never literally between "present" and "future" enjoyment, except theoretically, with reference to a margin at a "point" in a continuing process. The familiar psychological doctrine of the "specious present" should make that fact clear. Psychological science aside, it is evident that any experience of enjoyment is spread over a considerable interval of time, and also that in the nature of conduct as forward-looking, both alternatives of choice always involve future experiences. Some time is always required to carry out any finite investment or disinvestment, either in the "present" (near future) or in the (more remote) "future"—where disinvestment is really the future alternative planned for.

For perfect accuracy, both alternatives must be evaluated as "present values" of future time-segments of enjoyment, both of which, as quantities, involve the two dimensions, intensity and duration, and both of which, in addition, are *discounted* back to the present "moment" at which the choice is made. Hence, the accurate computation of both the alternative given up and that which is gained (in investment or disinvestment) would involve a factor of "interest", meaning simply the "yield" which is involved as an essential consideration in the choice. It is a fairly simple problem in algebra to set up an equation between the two present values, in terms of any given intensity and duration of the streams, to be solved for the rate of interest, or yield, as the unknown. But for the purpose of simplifying exposition, it will be admissible to assume for investment the "limiting case", in which the time required is so short that "interest during construction" may be neglected as an element in cost, and the whole investment treated as made at a "present" moment.

It is the other side of the equality, representing the "future" yield-stream, acquired by investment (or given up through disinvestment) or its present worth, which presents real difficulty, and is the central source of confusion in the whole theory of the productivity of investment. The main point which calls for demonstration is the fact that the yield of any investment, or increment of investment, realistically defined, is a *perpetual* flow of satisfaction, at a constant rate of intensity, beginning at the "moment" when the investment is made. The concrete limiting case, in which the "result" of an investment, a new source of service or productive resource, is naturally immortal, without maintenance outlay or replacement, is only more or less closely approximated in reality. Considering both sides of the equation, i.e. the two alternatives, the limiting case to be taken as a model is approximated when the construction period is very short and the service life of the agent very long.[1] We have to show that under the conditions of real life all capital is self-perpetuating, and is to be treated analytically and quantitatively as if every productive agent were infinitely durable.

It is, of course, true that an individual who saves and invests under ordinary conditions may or may not plan to maintain his investment (i.e., its yield) in perpetuity. He may save up for a vacation or a "celebration" in which his accumulation will be disinvested and consumed. This case of "episodic" production-and-consumption is in fact exceptional and an economy would not accumulate any large stock of capital if it were typical. On the other hand, the saver never commits himself irrevocably to perpetual maintenance of the investment, regardless of the durability of the resources which result from the investment, but is always free to disinvest at any time, through the sale of the investment to another party. Disinvestment by an individual is completely independent, in both directions, of disinvestment in the social economy of which he is a member. For a correct view of the theory of investment, it is necessary to consider an economy as a whole. For this purpose the convenient hypothesis is that of a small unitary community, but one which expects to go on existing indefinitely. We may think of the "Crusoe economy" hypothesis, modified by making it rather a "Swiss family Robinson", large enough to be self-perpetuating but with an integrated or "communistic" internal organisation, i.e. that of a family. But it may conveniently be referred to as a Crusoe economy, in order to eliminate effectively from our thinking that terrible source of confusion, the borrowing and lending of money, or—what is analytically the same thing—the lease or purchase and sale of assets between individuals.

The fact that productive resources resulting from investment are usually not naturally immortal, but require planned maintenance (including replacement) to make the yield-stream perpetual, is virtually irrelevant for theory, since they are self-perpetuating. The product or yield of any source of service can only be evaluated, or even conveniently thought of, as a rate, or ratio to some base—the exchange value of the source—by considering it as a perpetuity. Any future yield stream is a rate on, or percentage of, that present value, and only that, which it will maintain in perpetuity, plus some excess, the excess being the only yield. But, in a world in which useful resources (not free goods) can be and are produced or maintained, *any* future yield stream, however short in duration, is simply reducible to a perpetuity, both mathematically and actually, by setting aside enough of the current yield to perpetuate the remainder, by investment in a source or sources of some kind. Neglecting the interest accumulation during the period of time in question, the " amount " of the yield which must be set aside to convert the remainder into a perpetuity, is the base, the present value ; and the *annual* yield remaining, divided by this base, gives us the rate of return.

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[1] More accurately, any investment yields a perpetual "income", which may either be enjoyed in consumption, or wholly or in part invested in the future, or, of course, the "capital" may be disinvested (see text just below). But for the purpose of exposition, we may assume that the yield is consumed and enjoyed in perpetuity, making qualifications for other contingencies where necessary.

The amount which " must " be set aside out of any time-limited yield stream, to convert it into a perpetuity, and the magnitude (rate or intensity) of the perpetuity remaining, depend upon and measure the quality of the investment opportunity open in the economy in question ; or, more accurately, the ratio of the two, the rate of return, is the measure indicated. Assuming that men behave with economic rationality, perpetual yield streams will be produced (or maintained) only at the *minimum* cost in sacrificed " present " consumption which is possible under the given conditions in the economy ; or, investment will only be made at the maximum rate of return obtainable under the given conditions. No existing source (productive agent or resource) will be maintained and replaced, and no new resource will be added to an economy, unless the rate of yield is equal to the maximum obtainable in any way for the same sacrifice of present consumption.

The calculation form is not the only reason for considering the yield of any source as its perpetual yield. Wherever resources, i.e. any useful things whatever, are actually produced, or maintained, any resource or bit of capital which we choose to consider as a unit, viewed as the marginal increment of productive capacity in an economy, is actually self-perpetuating, hence essentially perpetual, regardless of the durability of the concrete agent or agents of which it is composed. And however the category of " capital goods " may be defined, in distinction from productive agents otherwise designated, the whole class of such agencies—really the entire productive capacity of the economy—is a self-perpetuating organic whole or unit.[1]

The self-perpetuating character also holds for any single kind of useful thing, in so far as it is actually maintained. The apparent inability, or obstinate unwillingness, of so many first-rank economists to make the obvious distinction between a concrete individual good and a quantity of capital, does not change the facts. Professor Mises twice uses the case of an " apple ", to illustrate the supposed absurdity of treating a bit of present consumption as equal in value to the same consumption in the remote future (pp. 478, 483). The necessity of considering a uniform flow of " apples " as the bench-mark for reckoning time preference, has already been pointed out. We have now to point out in addition that if the total stock of apples in an economy is maintained constant, a new and similar apple being produced as any one is eaten, the " capital " represented by the stock or by one apple, is maintained constant and, like the flow of satisfaction, is a perpetuity. Moreover, it is self-perpetuating, through the imputation of productivity.[1]

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[1] Only in a rather superficial view does any new increment of capital added to a productive organisation, consist of discrete identifiable things. Not only will the addition of any new agent change the productive capacity of most of those already in existence ; the addition of new productive capacity in any form will ultimately involve the reconstruction of most of the " plant " of any economy as a whole.

The least reflection will show that in all their more fundamental characteristics, all productive agents are like capital goods, in the long run view. This includes human beings, i.e. the qualities which make them useful in production. The fact that in free society human beings are not bought and sold, or " mortgaged ", hence are not very effectively " capitalised ", and their production is not controlled by capital accounting, doubtless justifies maintaining a general distinction between " labour " and " property "—provided unwarranted conclusions are not drawn. In simple fact, of course, labourers are produced, maintained and replaced at a cost. And so also, in the long run, are what are called " natural agents "—meaning always that their qualities of usefulness are so produced. The distinction between capital goods and other agents is at most a matter of degree, the degree of effective " fluidity " of investment in different forms.

Finally, it is to be noted that even in a decadent economy (one where there is net consumption of capital, reduction of productive capacity and of future income, in favour of enlarged current consumption) the same theoretical analysis holds good. It is never possible to say when the capital invested in, and represented by, any particular concrete resource is disinvested and consumed. The capital of any economy at any time is a unit; and net investment or disinvestment, or maintenance, is a fact or event which can be predicated only for an economy as a whole—and only quantitatively—but never accurately.

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From the foregoing argument it follows at once that any notion of a real and measurable production period, or period of investment, or average interval of waiting (Mises' *Wartezeit* or *Vorsorgezeit*, pp. 435ff.) is a purely artificial and arbitrary concept. The production of capital through investment involves waiting perpetually, and the original term, abstinence, is descriptive. It is indeed possible to compute such an interval with respect to any bit or increment of capital, artificially segregated, and for which a complete life history, beginning with zero and ending with zero, and including the amount and date of all increments of investment and disinvestment, or " payments in " and " payments out ", can be taken as known.[2] The computation would be possible for the world as a whole if we could get the data! But the absurdity of the suggestion is apparent. Economic life cannot be traced back to any hypothetical beginning in which no "capital goods" existed, but other economic agents did, and the latter were used to produce the "original" capital. (Professor Mises' persistence in the contrary assumption will call for notice later.) And even less realistically can we trace the future history of any economy forward to a point in time where all its capital will have been disinvested.[1]

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[1] In view of the unreality of the distinction between capital and non-capital, already pointed out, and particularly of the fact that human beings, as productive agents requiring maintenance at a cost, are essentially like any other form of capital (except for a low degree of fluidity of investment) this argument is not invalidated by the fact that apples are consumed by human beings. Even with reference to that element in human consumption of which the purpose is most purely " pleasure " rather than maintenance of productive capacity, the good (source of a service) consumed is still " capital ", and is still self-perpetuating, if the imputation of productivity is carried out *à outrance*.

[2] This computation will naturally be thought of particularly in connection with any concrete agent or " enterprise "; but it must be remembered that the designation of either is more or less arbitrary, as are the dates of both the beginning and the end of its " life ". The average period so computed will be the average length of time for which all capital at any time embodied in this form remains so embodied. For the computation itself see K. E. Boulding, " Time and Investment " (ECONOMICA, N.S., Vol. 3, No. 10, May, 1936), also his new book, *Economic Analysis* (New York, 1941), Appendix to Ch. 30, pp. 740–43. In Boulding's treatment, including

It should be clear without further argument that in a stationary economy, all production and consumption are strictly simultaneous; the waiting period is zero; there is none. And in a progressive or a retrogressive economy, the same is true of the production of what is consumed in any interval of time, long or short, down to an instant or "delta-t". If production in any interval exceeds consumption, the difference is an addition to capital, which will be productive until the "end of time" (i.e. of the economy); and if consumption exceeds production in any interval, the difference is a disinvestment of capital, whose existence had no beginning except that of economic history.[2]

Production for current consumption includes complete maintenance of existing productive capacity. No production really takes place until after such provision is made. Ignoring this fact is one of the most common as well as egregious fallacies in the exposition of the theory of capital. "Production" of capital items for replacement of items which wear out or superannuate, is not properly "production"

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the entire discussion of a rate of profit or of interest, it is assumed that the "enterprise" is finally liquidated, into consumption, without any salvage value transferred to another account, before the rate of return is computed. It is not clear whether he recognises that the payments into and out of any such capital account will be to a considerable extent transfers out of or into similar accounts, while payments-in which represent real investment will be largely the services rendered by capital represented by other accounts, and payments-out, which represent either yield or disinvestment from the standpoint of the particular account, would largely be used for reinvestment under other accounts.

[1] In this connection, we can only mention the persistence of the notion of a definite period of investment or waiting period in Professor Hayek's new book, *The Pure Theory of Capital*. See esp. Ch. VI. It may also be noted that in the case of any net disinvestment, however bounded, the latter may be reduced to a point in time, by a suitable calculation of interest. But only in connection with a capital account, with arbitrary boundaries, does the "case" of a flow of input and point-output approximate reality. A remote approach to this pattern for an economy as a whole may perhaps be conceived, in the situation where the world should receive a short advance notice of its impending destruction by some cosmic catastrophe, and on the unlikely supposition that people would attempt to consume as much as possible in some grand "spree" or display of "fireworks".

[2] An average service life might be computed for all the useful agencies or qualities in any economy (in the manner already indicated for a single one) within limits of accuracy set by knowledge of their actual past and future history. At best such an average would be largely fictitious, as well as of little accuracy, and the concept of such an average is of no particular significance for the theory of capital. To the extent that it is possible to isolate maintenance cost (including replacement) for the entire productive capacity of an economy, it is possible to regard this cost, per unit of time, divided into total capital value, as a theoretical turn-over period for capital. But the period so computed will have little relation to the time required, or the cost involved, in making an actual change in capital structure, notably the disinvestment of any considerable amount of capital for consumption, or its transfer (by transformation) from one use or one form to another, however uses and forms may be defined. Mr. N. Kaldor, in particular (in various writings), has laid much emphasis on this conception of a production period; but its usefulness and real meaning remain mysterious to me.

of capital at all, but maintenance, which is an integral part of the production of services currently consumed. Failure to make this distinction is an egregious example of double counting and wrong classification. Any excess of consumption over production, including complete maintenance of plant, in any economy, is consumption out of capital and not out of production. Production of capital should refer only to the creation of a net addition to aggregate existing capital.

As an obvious consequence it is meaningless to speak in quantitative terms of an " excess " of production through the use of any indirect methods rather than direct, the former meaning the intermediate creation of " capital " ; for, since capital is inherently self-perpetuating (unless and until the entire economy is liquidated), the ultimate yield of any productive activity which really produces capital—i.e. a net addition to total capital, however small—considered as an aggregate quantity of satisfaction, is an infinite magnitude. The yield of any capital item (however small) is a perpetual stream of consumption, measurable only as a rate per unit of time (really intensity) and not measurable as a magnitude.[1]

The conclusion of the argument up to this point may now be stated in a general proposition. In a world where productive investment is possible, and is being carried out in any amount—including the maintenance of existing resources, not naturally immortal—the present value of any future stream of enjoyment, whether naturally perpetual without maintenance, or time-limited, is the minimum cost of producing an equal perpetual consumption stream, or " income ", under the given conditions of economic life as a whole. Putting the same statement in reciprocal form, the rate of return on " capital " is the maximum perpetual income obtainable under the given conditions, through the creation of a new source of income, or the maintenance of old sources, measured as a rate per unit of time, divided by the aggregate present consumption sacrificed in making any such investment. An " investment " is, of course, to be understood as an increment of investment, made or maintained at the margin for the total productive plant of an economy. However: equality does not prove causality, still less show the direction of causality. To deal with this problem, it is necessary to consider the rate of return, or the valuation of income sources, in the usual terms of value or price theory, in the terms of demand and supply.

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The argument of the present section may be suggested by saying that the time-preference theory of capital and interest is a case of original and naive or absolute " Austrianism ". In terms of demand and supply, the demand side of investment activity is best viewed as the utility or psychological aspect of the choice involved, which is to say, as the " tender " of present consumption (saving) in exchange for perpetual future income. This in turn may be regarded as a form of time preference, if the time dimension is correctly understood, as approximately zero on the side of the saving (the offer side) and infinity (perpetuity) on the side of the return. The supply side will then be the " technical " side of the situation, its given conditions, the terms on which perpetual income is to be had for sacrificed present consumption, or the cost in present consumption, of a unit of perpetual income. The problem of the relative value of sources and their yield, the " amount " of present consumption, which will be worth a perpetual income flow of one unit per unit of time (the present value of the latter) then becomes a fairly simple case of the general problem of exchange value, the relation between utility and cost, as expounded in any elementary text-book, say with reference to two consumable products in a stationary economy. (Certain special features of this case will come to light in due time.) Two products, in a stationary economy at equilibrium, should obviously be thought of as two permanent rates of flow.

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[1] Professor Mises argues that the finite value of a perpetual yield-stream, represented by a piece of "land", establishes as an ultimate fact of valuation the preference of present over future satisfaction. We have already pointed out above that the concept of a quantity of present value is an approximation. The very notion of an infinite quantity is an absurdity. It will now be seen that an infinite quantity of future satisfaction is likewise absurd, since any future yield-stream, however small in intensity-times-duration, becomes through perpetual maintenance an infinite total quantity. A finite quantity of future satisfaction has meaning only in connection with a planned disinvestment. Cf. above, p. 417.

No better illustration of simple value theory could be found than that of the " deer and beaver ", with which Adam Smith begins his discussion of price determination (in Book I, ch. 6 of *The Wealth of Nations*). What is especially interesting about Smith's treatment is his failure to recognise the fundamental assumptions underlying his argument—plus the fact that the recognition has only gradually, and even yet incompletely, crept into the text-book and treatise literature of economics, in the course of well over a century and a half. The assumptions we refer to are the principle of utility and the principle of cost, in the particular form of constant cost. Under the condition that it costs two days' labour to kill a beaver and one day's labour to kill a deer, one beaver " must " exchange in the market for two deer, " because " at any other exchange ratio the amount of one commodity purchasable with one unit of the other will exceed the amount of the first which can be produced with the same transferable resources required to produce a unit of the second. Consequently, (intelligent) producers will not use resources to produce the second good since a greater quantity of it can be had by using them to produce the first and exchanging the result. They will transfer the use of resources from the second industry to the first until the exchange value of the two products is brought into conformity with cost, meaning until the same resources have the same value yield (perpetual flow of value) in the two industries. This is the general principle of price equilibrium, for any two goods which are produced wholly, or in any part, by the same productive resources.

As Smith's discussion makes clear, he was assuming (unconsciously no doubt) that the price in the market actually reflects the relative esteem value (utility) of the two objects, and that this in turn depends on the supply of both. To validate his position that " cost determines value ", he must have further assumed (unconsciously) that in connection with any transfer of production, the relative quantity of resources (homogeneous labour) used to produce a unit of each product would not be changed, but that the change in " output " would bring the relative utility into conformity with the (unvarying) relative resource cost. Smith's reasoning is strictly correct, on the basis of the assumptions which we have indicated. His treatment of productive capacity as consisting exclusively of homogeneous labour reflected a primitive moralistic prejudice, but might be justified as a simplification, if this had been indicated. He should have recognised that the employment of any freely transferable resources (including " land ") would involve exactly the same results. If only a part of the resources used is transferable (others specialised) the cost will not be constant—supply infinitely elastic—and it will not be true that cost " determines " price, though price will measure the marginal yield of the transferable resources.

The same general reasoning continued to be given by the British classical economists. It is typically in accord with facts (though with important exceptions) in a sufficiently long-run view, but for reasons not usually made clear. This is because resources which are specialised in the short run, causing the phenomenon of increasing cost, commonly tend ultimately to become unspecialised, because the " capital " in them may be disinvested, and reinvested in agents of any other form which under changed conditions will yield a higher return. Thus the central position of a correct view of capital in general value theory becomes apparent, with its consequence of a pervasive long-run tendency to constant cost, and the " determination " of price by cost regardless of utility relations, as Smith and his successors held.

After the subjective-value revolution of the early 1870's (Jevons, Menger, Walras) economists gradually came to see that value is " determined " by relative marginal utility, if supplies of goods and incomes are taken as given, a plausible assumption for conditions at a moment. Early subjective-value theorists also saw that value must tend in the long run to equality with money cost, raising the question of the causal relation between utility and cost in their bearing upon price, and ultimately in economic equilibrium as a whole. The view which we have referred to as naive Austrianism attempted (perhaps in natural exuberance of enthusiasm for a new insight) to make utility the cause of cost, by setting the cost margin, the cost which might be incurred without loss. This view was superseded by the " eclecticism " of Marshall, which particularly calls for notice, because of his similar eclecticism in regard to interest theory, where we shall presently find it definitely erroneous. Marshall emphasised the joint action of cost and utility (the "scissors" figure), adding that utility is predominantly effective in the short run, while cost exerts more and more influence as a longer period of adjustment is allowed. He failed to make clear the essential fact that the relative roles of utility and cost (demand and supply, psychology and technology) depend upon the relative elasticities of demand and supply. And, of course, he did not observe that it is by no means necessary *a priori*, or universally true, that demand is more elastic than supply, or that it becomes elastic more rapidly in time—though his conclusion is no doubt typically in accord with facts. The essential point for the theory of investment yield (hence for the general theory of interest) is that this price is like any other in that the relative importance of utility and cost of production in the causality is measured by the extent to which the one curve or the other is more elastic—for whatever short or long run is in question.

The application to capital theory will next be considered. This particular case of value theory presents two peculiarities or special conditions which call for notice. The first is that specialisation of productive agents to one field of use or the other plays little part. Current income and new sources of income are both produced by virtually the whole complex of kinds of resources in existence (however these may be classified) functioning in symmetrical collaboration. (Temporary specialisation, and the time consequently required to shift production in either direction, cannot be ignored in an exhaustive analysis.) It is peculiarly difficult to explain the belief of Böhm-Bawerk—and of economists quite generally, under both "Austrian" and early classical influence—that "capital goods" are a distinct category of agents produced by "primary" factors, and especially by labour. This belief is merely a glaring example of the fact that the "best minds" typically accept and defend propositions patently contrary to fact, under the influence of tradition, or prejudice, or some theory to which they find themselves committed. If there is any general difference, the production of capital goods certainly involves pre-existing capital goods (in the common-sense classification) to a relatively greater degree than does production for current consumption.[1]

The second peculiarity of interest theory as a case of price determination (here viewed as the price of capital, measured in units of perpetual yield) is perhaps even more important than the first. It is found in the fact that capital is an "accumulating" good. In this case, as we have seen, production must be taken to mean net production (positive or negative), current production being an addition to the total accumulation from all past time.[1] Furthermore, the actual magnitudes are such that the net addition which is made, or could be made, in any short interval, such as a year, is an extremely small fraction of the accumulated stock already in existence. In consequence, the theory of normal equilibrium price, applicable to products currently consumed, does not apply at all to capital goods as a class. The supply of capital is invariant at a moment, and virtually unaffected by new production over a considerable period, and as we shall see, further production does not even tend to establish an equilibrium condition in which supply would be constant. This last, of course, is the condition—production and consumption proceeding at the same rate—which forms the major premise of normal-price analysis. The supply of capital being substantially unaffected by current production (the antithesis of the situation with goods where supply means current production), its marginal yield is correspondingly stable.[2]

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[1] Interestingly enough Professor Mises (p. 451) mentions rather contemptuously the fact that in capital creation we do not have to start over again every time. He fails to see that this fact makes capital self-perpetuating, and vitiates his theory as a whole. As already shown, even his statement that the first capital was produced exclusively by labour (loc. cit.; cf. also pt. IV, Ch. 9) is untenable, even if natural agents be included.

Incidentally, the obvious fact that all kinds of productive agents collaborate indiscriminately in the creation of capital also invalidates the notion of a sequence or "order" of goods in production. Mises constantly refers to this *Güterordnung*, one of Menger's favourite ideas. (Cf. pp. 65ff., 196, 218, 253, 291ff., etc., for examples, before he comes to his main discussion of capital theory.) In plain fact, coal is used to produce iron, and iron to produce coal, and either coal or iron may be used directly as a source of enjoyment, or indirectly, through the creation of other products, in any number of "stages"; and this is the typical situation.

These two considerations, (*a*) that the specialisation of productive capacity to production of current consumption or to production for investment is unimportant (except for short periods of readjustment) and (*b*) that any current net production makes a negligible difference in the total supply of capital—taken together, conclusively mean that at any time capital resources are produced under the condition of constant cost. Consequently, their price (and reciprocally the rate of interest) is determined by this cost, regardless of men's utility judgments or preferences, meaning in this case the relative preference for current consumption and future income flow. On the psychological side, as already noted, (*a*) all that any individual can do in response to his time preference is to save (or eventually to dis-save) until at the margin his time preference is brought into conformity with the rate of return; and (*b*) this curve of marginal time preference is highly inelastic, in contrast with the very high (momentarily infinite) elasticity of the technical cost curve.[3]

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[1] The case of a decadent society, with net disinvestment or decumulation, involves no significant change in the theory, beyond appropriate restatement. Since "capitalistic" society has been progressive, and probably has to be progressive if the enterprise organisation is to function (the "institutional" reasons cannot be gone into here), we may omit consideration of that case. Nor need we consider temporary intervals when there is net decumulation, in consequence of war, or economic disorganisation through depression.

[2] The "expected" yield, which is the crucial matter for some branches of economics subsequent to general price or interest theory, may, of course, vary widely in response to speculative conditions rooting in a wide variety of causes.

[3] It must be kept in mind that in the short run, productive agents are in fact specialised to any use in which they are actually employed, and consequently, a considerable time may be required to make the various productive adjustments called for in response to a large and rapid change in the rate of investment (or the "expected" yield associated with speculative conditions). Consequently, in such periods of rapid change—*if these have not been anticipated and planned for in advance*—the principles of general theory will not be applicable; the cost curve for capital will show inelasticity, in either direction, perhaps in a high degree. In connection with unexpected changes, the cost of capital is a function of the rate of investing, as well as of the total accumulated investment. But investigation of these phenomena belongs to the theory of the business cycle, or "conjuncture", and is explicitly excluded from the scope of the present discussion.

The general conclusion is that the equality stated above (p. 421) between the rate of yield and the cost of producing (resources yielding) a unit perpetual flow of income, is to be converted into a statement that the rate of return is *caused* by the ratio of cost to yield, which like any cost depends on general conditions in the economy. Causality in the opposite direction is strictly negligible. This conclusion states the general theory of the rate of return on investment, and the general theory of interest, for conditions at all like those of the real world.

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Before leaving the subject, we must point out that the argument as a whole also invalidates any " equilibrium " theory of the interest rate, in which time-preference and productivity (utility and cost) are made to play more or less co-ordinate roles. The allusion is, of course, to the " neo-classical " theory of Marshall, Fisher, Taussig, *et al.* These theories make time-preference function, not absolutely, as in the theory of Fetter and Mises, but as a limitation on the supply of savings (the demand for productive capital) and hence as helping to control the marginal productivity of investment. Such a view is obviously invalidated by the fact that the elasticity of the supply of capital (its cost as a function of the price of its service) is indefinitely elastic, and the more so in view of the low (in fact problematical) elasticity of saving as a function of the same price. There is no real tendency toward an equilibrium position at which the supply of capital would be constant, or responsive in both directions to changes in the rate of production. Under actual conditions, or any foreseeable conditions—apart from temporary disturbance, war, depression—changes in the production of capital appear only as variations in the rate of growth, not in the supply itself. No amount (rate) of saving which is socially possible can make any impression on the productivity of investment. This would be true even under *ceteris paribus* conditions as regards opportunities for investment. Even if we imagine a society saving and investing the entire potential yield of its total productive capacity (*ceteris paribus* in the sense indicated), the rate of return would at the utmost fall asymtotically along the curve showing the actual elasticity, which wealth and income figures indicate to be of the order of unity. It could never possibly reach zero. (Cf. above, pp. 414-416 for proof.) The insatiability of wants, and the unlimited technical opportunities for investment, make it unthinkable that all services of producible productive capacity, including all that requires maintenance, should ever become free goods.

But capital accumulation, or production, has two other peculiarities, not already noticed. First, it is literally impossible for accumulation to proceed without changing the conditions under which accumulation takes place, and in such a way as to stimulate further accumulation. For all accumulation necessarily creates additional income for the economy, out of which it is easier to save. It cannot be assumed that this stimulative effect would not be as great as the reduction in the inducement to save consequent upon the (necessarily slow) reduction which is to be expected under given conditions as to investment opportunity. In the second place, it is not permissible to assume that the conditions of investment will remain unchanged during any considerable progress of accumulation. We also know that practically every form of social progress, and especially the progress of invention, to which no limits can reasonably be assigned, increase the " demand for capital ", moving the demand curve upward or to the right. As a matter of historical fact, growth of demand has roughly offset the tendency to diminishing returns. The rate of return (and the rate of pure interest) has shown no clear trend in either direction, as far as it can be estimated, over the period for which reasonably indicative data are available.

The Growth of Thought in Society[1]

By M. Polanyi

A movement denying the justification of pure science was started in England in 1931 by a group of Soviet delegates, including Bucharin and Hessen,[2] at an International Congress of the History of Science, held in that year in London. It has been carried on since with considerable success by a number of able writers, mostly Marxists, under the leadership of L. Hogben, J. D. Bernal, and J. G. Crowther. As a result the idea of pure science is considered to-day as obsolete and reactionary by most of the scientists who take an active interest in the position of science in society. Though such scientists form a comparatively small minority, they have now brought considerable influence to bear on important organisations and publications dealing with scientific policy.

The doctrine of this school can be summed up in three points. (1) Pure science, as distinct from scientific technology, has no real existence. All science, pure or applied, arises in response to the specific practical needs of contemporary society. The ideals of a disinterested search for truth and of the cultivation of science for its own sake are unsocial and futile.[3] (2) Modern science in the last 300 years pursued this wrong tendency, which must now be replaced by a social control of science in the interests of the community.[4] It follows that resistance of scientists to social control of research and their claim for freedom of research is unreasonable. (3) Instead of urging such claims, scientists ought to join in the struggle for the establishment of the right kind of political power, which may be expected to advance science in the right direction.[5]

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[1] The following reflections are occasioned by J. G. Crowther, *Social Relations of Science* (Macmillan & Co.), 1941, xxxii + 665 pp., 16s. net. (Henceforth referred to as *S.R.S.*)

[2] See *Science at the Crossroads* (Kniga), 1931. Hessen's article on Newton is considered by Professor Bernal "as the starting point for England of a new evaluation of the history of science" (*Social Functions of Science*, 1939, p. 406).

[3] These ideas were first made popular by Professor L. Hogben, himself not a Marxist, in *Science for the Citizen* (1938), from which a characteristic quotation is discussed below (pp. 452–3). This book had an enormous success. Another statement, even more effective among scientists, was that by J. D. Bernal in *The Social Functions of Science*; in his chapter on Pure Science (pp. 95–98) he ridicules the ideal of Pure Science as mere snobbism. J. G. Crowther in *S.R.S.*, p. 522, calls the disinterested pursuit of truth "a little cold, mean and selfish" compared with problems of practical use.

[4] *S.R.S.*, p. 352, condemns "three centuries piling up discoveries in regions of research artificially isolated from the general body of knowledge of social affairs."

[5] J. D. Bernal, *Social Functions of Science*, p. 404, says scientists should support Popular Front. Crowther, *S.R.S.*, p. 332, urges scientists to struggle for the rise to power of a "progressive class" and get the change over quickly.

This last point is now elaborated by Mr. Crowther, with obvious reference to the Communist Revolution, as it occurred in the past in Russia—and is expected by him to happen also everywhere else. We are told that in establishing the rule of—what Mr. Crowther calls—" progressive governing class ", the most ruthless methods are justified. The main point is to get the necessary change over quickly. The methods of the Spanish Inquisition are recommended.[1] Their past application by the Soviet authorities is excused as " imperfections due to the limitations of mankind ". Scientists who fell victim to such persecution are charged—without any evidence—of having brought it on themselves " by short-sighted opposition ".[2]

These maxims concerning the position of science are identical in principle with those of Fascist Totalitarianism, as described for example by Rauschning in *Hitler Speaks*. A reference to this text by Mr. Crowther[3] supports this identification. Needless to say, in Hitler's eyes, the " progressive governing class " is the " ruling race " of Nazi Germans.

The purpose of this essay is to analyse the part played in society by the ideal of Science and by the ideals of other aspects of truth. We shall trace the principles of organisation which are appropriate for the service of these ideals, and through which the intellectual and moral order of society is established and developed further. We shall show that these organisations must be free, and that they must conflict with the claims of a Totalitarian State. Finally we shall demonstrate that the abandonment of the ideals of truth logically entails the replacement of these ideals by fanaticism coupled with cynicism—and that the establishment of a totalitarian rule of unscrupulous fanatics must follow.

Personal Interest in Science

The totalitarian doctrine asserts that scientists who cultivate science for its own sake are neglecting their duty to the community. They are reproached with seeking their private amusement heedless of the financial cost and irrespective of the consequences to society. Such unsocial practice—it is urged—ought to be suppressed, and science should instead be conducted as a public service. Scientific progress should be planned and directed by the authority representing the interests of society—that is by the State.

This argument assumes the totalitarian view of the structure of society. It implies that the social order is upheld by the commands of the State; all apparently independent manifestation under the

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[1] " Inquisition is beneficial to science when it protects a rising class " (p. 333). " The danger or value of an Inquisition depends on whether it is used on behalf of a reactionary or a progressive governing class " (p. 331).

[2] *S.R.S.*, p. 557.

[3] *S.R.S.*, p. xxix : " Hitler's view is extremely dangerous because in relation to the present situation it contains more truth than the conventional idealistic view."

State being either mere pretence or else representing some private residue to which the State has made no claim. Totalitarians assert that this is the actual state of affairs, basically, in the democracies; and that the totalitarian state, built on these lines, represents the only honest and logical position for the State power. In their view, therefore, an independent personal action can never claim to perform a social function; it can only be a private amusement, which, if it affects the public, will—more often than not—result in a public nuisance.

In order to prepare the critique of this doctrine—which will form the larger part of my subject here—I shall first briefly define the position of private freedom, about the nature of which the totalitarian and the liberal view of society do not differ in principle; though they do regard its value in a different light.

Private freedom may be represented as the converse of personal servitude. When it is completely absent, men are reduced to the state of slaves or villeins. Medieval authorities on the Common Law define this freedom as the condition in which a man's obligations are defined, and not to be varied at a master's pleasure.[1] The most decisive step towards a free status consisted in the fixing of feudal dues by custom, law and written copy. As a final stage in his emancipation the peasant acquired the right to discharge his obligations in cash, not in labour or produce. This commutation enabled him to dispose freely of his own time and to engage only in such work as was most congenial and profitable. The desire for greater freedom in this personal sense continues to enter as a factor into many modern relationships, as in the case of domestic servants, who prefer factory employment, which is more strenuous and less well paid, for the greater personal freedom which it accords.

The desire for personal freedom is the desire to be left alone; it does not define its purpose, because that would limit the freedom which is wanted. The demand is entirely irresponsible, and is put forward as a personal right of the individual. Liberals recognise and encourage the right to personal freedom, because they connect it with wider classes of human and social liberty. The totalitarian view admits the existence of no form of liberty other than that of private freedom, and sees therefore no reason to encourage its claims. It may tolerate personal freedom, but only so far as this does in no way affect the collective interests of the community. And above all, it insists, and must insist—as shown below—on identifying irresponsible private freedom with liberty in general, and arguing that hence social responsibility can only be achieved by the opposite of liberty: which is subordination to the orders of the State.

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[1] Thus Bracton says: "For that is an absolute villeinage from which an uncertain and indeterminate service is rendered, where it cannot be known in the evening what service is to be rendered in the morning, that is where a person is bound to do whatever is enjoined to him."

A more general view of liberty, extending far beyond the claims of private freedom, will be most readily gained after a brief analysis of the two kinds of order which are known to occur both in nature and in society: one resulting from the exercise of authority *over* a group, the other from the enjoyment of freedom by the individuals *in* a group.

Two Kinds of Order

Wherever we see an arrangement of things, or of men, in good order, we instinctively assume that someone has intentionally placed them in this way. A well kept garden must have been laid out; a machine, working properly, must have been constructed; a company on parade must have been drilled and placed under command; that is the obvious way for order to emerge. This method of establishing order consists in limiting the freedom of things and men to stay or move about at their pleasure, by assigning to each a specific position in a pre-arranged plan.

But there does exist another, less conspicuous, type of order which is based on the opposite principle. The water in a jug settles down, filling the hollow of the vessel perfectly, in even density, up to the level of a horizontal plane forming its free surface. A perfect arrangement, such as no human artifice could reproduce, if the process of gravitation and cohesion, to which it is due, refused to function for a moment. Yet any number of such containers of varied and complex shapes, joined to a system of communicating vessels, could be filled in the same perfect and uniform way up to a common horizontal plane—merely by letting a liquid come to rest in them.

In this type of order no constraint is applied specifically to the individual particles; the forces from outside, like the resistance of the vessels and the forces of gravitation, take effect in an entirely indiscriminate fashion. The particles are thus free to obey the internal forces acting between them, and the resultant order represents the equilibrium between all the internal and external forces.

If the latter are absent or negligible, and the internal forces operate alone, the resulting equilibria present even more striking regularities. Fluids, gases and liquids take on spherical shapes; and at lower temperatures substances solidify into crystals, in which the atoms are arrayed at faultlessly even intervals in the three dimensions of space.

The molecules of half a dozen different substances dissolved together in a glass of hot water will deposit on cooling within a few minutes, each building up separate crystals of its own. Many millions of molecules of each substance will be sorted out from the others and neatly stacked up in its separate regularly spaced piles. The achievement may be compared in its magnitude with the sorting out, and careful arrangement into separate regular stacks, of the differently coloured marbles of a layer covering the whole planet. Such a task would keep the whole of humanity busy for years ; yet a similar one is accomplished at no cost in a few seconds by the internal forces acting between a group of particles.

It is clear that the intervention of any human ordering agency which attempted to take over the task of the internal forces would be entirely ineffective. By directing the particles to wait their turn, to be picked out and arranged individually, the authorities would merely petrify a chaotic situation which they would never succeed in disentangling by methods based on the exercise of specific discrimination between individual particles. We may conclude that when very large numbers are to be arranged carefully, this can be achieved only by the spontaneous mutual adjustment of the units ; not by specific assignment of the several units to positions in a prearranged plan.

There is, of course, in general, no reason to expect such mutual interactions (internal forces) to be present between the units as will lead to the formation of a desirable orderly arrangement between them. Crystallising forces might be altogether absent, as in the case of the differently coloured marbles mentioned before which have no tendency to segregate spontaneously, as would different kinds of molecules. Or again the new order may be undesirable, as in the case of a chemical reaction yielding products that are not wanted, when performed in an unfavourable medium. We shall see later, when we apply these considerations to social problems, that the result of spontaneous ordering can be influenced by regulating or modifying the nature of mutual interactions between the units, which in this case consists of men or small organised bodies of men. At the moment we want only to confirm from this discussion that whatever such modifications may amount to, they will never turn a process of " crystallisation " into one of ordering according to specific plan ; and that, hence, in case the careful adjustment of a very large number of units is wanted, we have to accept one or another spontaneously arising order, and our choice will be greatly limited thereby, as compared with the number of desirable patterns our imagination can conceive.

This does not imply that spontaneously attained order cannot be of the highest degree of complexity. According to W. Koehler, the perception of *Gestalt* is due to the mutual interaction of the elements in the sensory field.[1] The evolution of the embryo from the fertilised cell may also be regarded as arising from the continuous tendency of its particles, interacting with the nurturing medium, to come to an internal equilibrium. The particles in the field of one " organiser " seem to be in complete mutual interaction, ready to take up in the developing whole any part which may fall to them through the interplay of the internal forces of the system. The entire evolution of species is commonly thought to have resulted from a continued process

[1] W. Koehler, *Gestalt Psychology*, New York, 1929.

of internal equilibration in living matter, under varying outside circumstances.

Such examples, however, should not prejudice us in favour of order by mutual adjustment, and against specifically planned order. Where smaller members are concerned, the latter is likely to show a greatly superior performance ; and, of course, all machinery and mechanical technique of man demonstrate this superiority when numbers are small enough. The two alternative and opposite methods of achieving order—by limiting the freedom of the particles, or by giving full scope to their interactions—have their respective uses, and, owing to their extremely different operational principles, should rarely come into competition with each other. They will, however, usually be found combined to some extent in the way mutually exclusive elements combine : namely, one filling up the gaps left over by the other, and vice versa. Ordinary examples of this relationship are obvious enough : we will discuss it further when applying it to society.

Corporate Order

The main difficulty in handling men according to a pre-arranged plan lies in the fact that the outcome of human endeavour is mostly uncertain and is often worth while only to the extent to which it is uncertain. Sometimes this is obvious enough. Everyone understands that in a war the plans for the further conduct of the campaign cannot be completed twelve months ahead and presented at the beginning of each fiscal year with all the main battles clearly set out and a reasonable estimate of the costs included. And—though some passionate planners may speak as if they did not realise that this also largely applies to the conduct of research and production even in normal times—it is usually accepted that no activity in which new problems of any importance have to be solved can be planned in advance according to a time-table.

This will be the more true the more thoroughgoing is the proposed planning : that is, the more complete is the co-ordination of the individual actions according to the plan, and the less is left to the discretion of the individuals who are to carry it out. A closely co-ordinated body of men, applying themselves to a difficult task, will require re-direction almost every day in order to meet new problems as and when they arise. For this there must be a person in charge with responsibility to re-plan and re-organise continuously the joint activities of the men. They must form a corporation under the authority of a chief executive.

The chief, unable to give orders directly to more than 5–6 subordinates, will devolve his powers to successive tiers of subordinate officials below him. These broaden out at each stage, down to the lowest tier, which contain the officials in charge of the working men and women actually handling the job. The directions of the chief descend to these through a pyramid of authority, which is also an organ for reporting upwards the events occurring below in the line of workers.

In a closely co-ordinated corporation each person's work is determined by the directions received from above, and all his communications regarding his work are in the form of reports to his superior. An official's direct contacts are essentially limited to the one man above him and to the 5–6 immediate subordinates below him. Any direct official contacts he may make beyond that would necessarily be at the expense of effective organisation. Since they would inevitably short-circuit some of the lines of authority on which that organisation relies, they would cut off either a superior or a subordinate, as the case may be, from some of his proper responsibilities.

The actions of a perfectly co-ordinated corporate body are essentially those of the one man at the top, who is the only one in the corporation acting independently. All others must obey first, and act only within the limits of, the changing directives issued daily by their superiors. The chief alone is allowed to deal with the wider perspectives and longer range problems of the corporation, he alone can evolve a strategy or policy and exercise powers of judgment of a high order. The lower ranks have only fragmentary tasks allotted to them, which they must solve within a scope limited by another man's decisions. They can show skill of various degrees, but, being tied down to a mere detail in another man's scheme, they can exercise no creative faculty of their own.

The immense strength of this method consists in welding the efforts of many men to one joint whole, which reflects the ideas of the chief and his advisers. The organisation elaborates these ideas into a wealth of details and co-ordinates the men at the bottom of the pyramid to carry them out. Each of these participates in a specific function of his own. It is by virtue of the superior efficiency of a far-reaching division of labour that the corporation forms a whole ; greatly exceeding in effectiveness that of the aggregate of its participants, when operating as single individuals.

Some of the limitations of the corporate method can be derived from this analysis. A corporation charged with a number of tasks which are by nature separate will tend to split up into smaller operational units. Severe troubles will result if the separate tasks in question must use some resources in common.

But the type of administrative difficulty which is most illuminating for our subject is that which occurs when the authorities undertake to commandeer very large numbers of people and very diverse materials for special purposes at a variety of places. The results of such attempts—which are unavoidable in wartime—are large-scale maladjustments, which are manifested in the forms of indefinitely accumulating stocks in one place, of machinery without workers in another, and of men waiting to be given jobs almost everywhere. The difficulty arises here from the fact that the task inherently requires a larger number of adjustments than a corporate organisation can carry out or control. The sorting out of men belonging to many hundred different professional grades and of materials of many thousand different qualities, and the re-grouping of men and materials into various productive units, cannot be carried out by a type of organisation in which each individual man and piece of property is assigned to a small sub-section, communicating only by an official channel of impassable length with any other small sub-section. The efforts to adjust the numerous lateral contacts involved in the re-grouping of conscripted men and materials will choke the official channels, and result in symptoms of paralysis below. Or else, if a large amount of cross linking is allowed at the base, the result will be the collapse of authority at the top and the spread of irresponsible activity throughout. Cross-links will often be established by impatient subordinates, tired of waiting for the official procedure to connect them with others. Thus arises all the futility, impotence and demoralisation with which corporations become impregnated, when they are put to tasks that are too complex for them.

This is the reason why, as already mentioned in the previous chapter, the scope of all specific ordering is limited to a comparatively small number of elements. Men cannot arrange large numbers in complex patterns : complex in the sense that each element is related specifically to many others ; and this deficiency of man is not greatly offset by a devolution of his powers through tiers of subordinates to an entire corporation of officials. We have observed before that no authority can take over a task of ordering, achieved by mutual adjustment of large numbers. We may add now that if order is ever attained by the latter principle among men in society, the attempt to replace it by corporate order must lead to precisely that administrative chaos which we described in the last paragraph.

Dynamic Order in Society

The term "dynamic order" is used by W. Koehler for an ordered arrangement resulting by spontaneous mutual adjustment of the elements, and I shall henceforth apply this expression here.

The best known example of dynamic order in society is that of economic life based on a competitive system of individual producers and consumers. For reasons which will become clear later, we prefer to limit ourselves in this chapter to the consideration of the order of production only, and to replace the consumers by mere demand curves, assumed to be prevailing in the market. Similarly the owners of resources, including workers, may be replaced by supply curves of resources, including labour. Producers may be single individuals or heads of corporations.

Producers are constantly on the look-out for an opening to utilise at a greater profit the resources which they now control, and to gain the control of resources, at present managed by other producers, by finding more profitable applications for them. Each individual decision of a producer results in a change of his demands on the market of resources and of his offers to the consumers. These demands and offers are made in public, and affect the price structure of resources and consumers' goods, thereby leading to numerous adjustments of arrangements made by other producers. Such are the " internal forces " through which individual producers interact. Each interaction tends to a new mutual adjustment in the sense of a somewhat increased satisfaction to the consumer, as expressed by his own preference ; and the series of continuously repeated mutual interactions tends to produce a distribution of resources in which each element of resource is used by producers to the greatest satisfaction of the consumers, as expressed by their demand curves. The result may be called a dynamic order of production, because it is an arrangement of great complexity and usefulness, achieved by a series of direct lateral adjustments between individual producers making independent decisions.

The most varied types of dynamic order are found in the intellectual and moral heritage of man. Of these we will take first the example of Law, and of Common Law in particular. Consider a judge sitting in court and deciding a difficult case. While pondering his decision he refers consciously to dozens of precedents and unconsciously to many more. Numberless other judges have sat before him and decided according to statute, precedent, equity and convenience, as he will have to decide now himself ; his mind, while he analyses the various aspects of the present case, is in constant contact with theirs. And beyond the purely legal references, he senses the entire contemporary trend of opinions, the social medium as a whole. Not until he has established all these bearings of his case, and responded to them in the light of his own professional conscience, will his decision acquire the force of conviction.

The moment this point is reached and the decision publicly announced, the tide of influences starts running backwards. The addition, which the new decision makes to the Law, has arisen as an interpretation of the Law as it stood before ; hence it represents a new aspect of the previously existing system, and makes it appear—to a greater or lesser extent—in a different light than before. Public opinion also has received a new response and a new stimulus. All judges yet to come have received new directions for their future decisions.

Thus it seems clear that the complex system of Case Law arises by a process of direct adjustments between succeeding judges. Each new decision is made with reference to all those made up to that date, and causes all earlier decisions to become—in effect—somewhat modified. This is precisely analogous to the relationship between the consecutive decisions of individual producers acting in the same market.

The next example of dynamic order will be our main subject, Science. Every scientist in search of discovery is faced with the scientific results and opinions of all other scientists up to that date, both living and dead, which are summed up in text books or—for more recent work—in current publications and public discussions. The scientist differs from the judge in that he is not given his case to decide, but has to select his own problem for investigation. Early in life he specialises on certain branches of science which fit his own personal gifts and his own strongest inclinations. Then he looks out for an opportunity to apply his particular knowledge and gifts ; and finally he selects a special problem by the pursuit of which he expects to achieve the most important results. In the setting of his problem and in the way he seeks its solution, he is applying the traditional methods of science and the particular procedure of his own branch: with such possible modifications as he may desire to attempt. His judgment, through which his results are expressed, is based on accepted scientific standards of reliability and precision : again, possibly, with some personal variation of his own. Discovery in the end will be largely based on thousands of previous discoveries ; and though the new addition will always modify the previously prevailing ideas to some extent, and sometimes may cause revolutionary changes in outlook, the essential unity of science will be maintained. Scientific discoveries are published without delay, since each scientist desires to get the credit for his own achievements. Discoverers will often defend their claims emphatically against criticism and seek to assure their acceptance by the scientific public.

Science is thus seen to be growing by the characteristic process producing dynamic order. New scientific claims are made in due consideration of all previously established ones ; and the results thus obtained continuously modify the previously achieved positions of science.

In the way a scientist, intent on a problem, consults the results and opinions of scientists who worked before him, he resembles a judge referring to precedent. But in the way in which he looks out for a problem to which to apply his special gifts to the best advantage, and later, when discovery is achieved, puts his claims before his colleagues and tries to gain their acceptance for them, he acts rather like the business man, first seeking the most profitable application of his resources and then soliciting the consumers' approval for his goods. We see here a variation in the nature of the methods of adjustment (" internal forces ") that are operating in the formation of the dynamic order. Between different judges the adjustments are of a purely consultative character ; between business men they are largely competitive ; while between scientists they show combinations of both types.

Science and Law are two extreme types of dynamic order in the mental sphere ; the first being mainly cognitive, the latter mainly normative in its character. There exist many other systems in the intellectual and moral sphere, and among them all kinds of blends of these two characteristics. The social legacies of language, writing, literature and of the various arts, pictorial and musical; of practical crafts, including medicine, agriculture, manufacture and the technique of communications; of sets of conventional units and measures, and of customs of intercourse; of religious, social and political thought; all these are systems of dynamic order which were developed by the method of direct individual adjustment, described for Science and Law. In each field there is being handed on from generation to generation a public mental heritage accessible to all; and new potential contributors are making contacts, of a more or less consultative or competitive character, with the elements which others have established in the same field before. Then, when they suggest their own additions or reforms, they return to the public and claim publicly that these be accepted by society—to become in their turn a part of the common heritage.

PUBLIC LIBERTY

The maintenance and growth of dynamic order in society entails a kind of liberty that goes far beyond the claims of personal freedom. Individuals, participating in the building up of a dynamic order, all act independently. They are not fulfilling another's instructions, elaborating details of another person's scheme, as is the subordinate official's duty. On the contrary, any specific desire of any other person, regarding the course of their future action, would be rejected by such an individual as improper, and injurious to his own function. Presented with the entire scope of a situation calling for initiative and judgment of a higher order, he must be given freedom to act according to his own conviction.

This freedom is in many ways the opposite of private freedom. It is not meant for the satisfaction of the desire to be left alone, or to do as you please. A judge may enjoy discharging his office, but that is not the purpose of granting him independence. The scientist's passion for research gives him immense satisfaction, but that is a poor reason for giving him the security of academic freedom. Nor should any business man in the modern world believe that his property rights over capital are given him for his pleasure. The freedom with which we are concerned here is not for the sake of the individual at all, but for the benefit of the community in which dynamic systems of order are to be maintained. It is freedom with a responsible purpose; a privilege combined with duties, as exacting as any that are shouldered by man. It may well be called, therefore, Public Liberty—as opposed to Private Freedom.

The Totalitarian State, which claims that it completely represents all the collective interests of the community, must reject the rival claims of individuals to act independently for the benefit of society.

Hence the Totalitarian contention that liberty can mean only a private freedom to act unsocially, or at least irresponsibly, is a necessary corollary of the conception of the State as a corporate order specifically planning and directing in the common interest the entire collective activities of the community. Such a conception implies the rejection of all dynamic systems of order in society, and makes their suppression an essential condition for the existence of the State.

The Liberal view of the State can be represented, on the contrary, by analysing the changes which would have to be made in a corporate authority in order to transform it into a dynamic order. The change-over could be effected by a strengthening of the direct lateral adjustments between the subordinates, up to the point where all the specific features of their actions are determined—not vertically from above—but laterally by direct contacts below. Once all *specific* initiative has been handed over to the individuals at the bottom of the pyramid, the authority above can have left to it only functions of an *indiscriminate* character. The former executive authority is then transformed into a *supervisory* authority, presiding over the free individual initiatives below. Its functions are now: to protect these initiatives, to provide opportunities for their exercise, and to enforce the rules which govern the interaction of the individuals under its care. The services which such a State, acting as supervisor to the growth of dynamic order, renders to the community are the exact opposite of those which a State built as a corporate authority can render; it fosters the dynamic order which the imposition of corporate authority would necessarily destroy, and abandons thereby the possibility of carrying out specific tasks by centrally directed co-ordination of its citizen, which is the purpose proper to a State constructed as a corporate authority.

The functions of modern Democratic States in peace time correspond to that of the Liberal view of the State. These States act mainly as supervisory authorities, presiding over autonomous dynamic systems which they foster within their realm. The specific demands (in matters of health, education, defence, etc.) which they make on their private citizens are, in peace time, few and not far reaching, compared with the effects which the dynamic systems of society, competitive enterprise, the law, science, art, religion, etc., exercise on the citizens' life. In fact, corporate institutions, effectively co-ordinating their subordinates to specific tasks, are in (peace time) Liberal society, small, compared with the field of dynamic order, and the operations of these are determined by their participation, as wholes, in wider systems of dynamic co-ordination. Corporations with specific operative aims are mainly industrial enterprises, co-ordinated between themselves by the dynamic order of competitive production. The few other instances include such minor corporations as teams of research workers, dependent on senior scientists—which are mutually co-ordinated by the dynamic system of science.

The existing Totalitarian States do not achieve the extreme opposite of the Liberal idea, which would be a corporation in which all the functions of every citizen are assigned to him as specific tasks by a superior State official. In all large corporate organisations there are a certain number of cross links below, which, while they necessarily reduce the precision of instructions transmitted from the centre, introduce a certain amount of dynamic order instead. Though Totalitarian States claim to be responsible for all the collective interests of their citizens, they actually achieve only a paramount framework of corporate power, which leaves a varying amount of unabsorbed dynamic order functioning in the interior of the corporate organisation.

The struggle—conducted often at the cost of disastrous consequences—for the final subjection of this residue, persisting with particular tenacity in the economic field, is a constant preoccupation of Totalitarian Governments. The fluctuations in this struggle mark off the four main periods in the history of the U.S.S.R.: War Communism (1917–1920), N.E.P. (1921–1927), First Five Year Plan (1928–1932), and the subsequent period up to 1941.

I have pointed out in this chapter that responsible public liberty sets a limit to irresponsible private freedom ; but we must not think of the two as enemies. On the contrary, they merge into one another and mutually stimulate each other. Liberalism recognises that privacy is the ground on which—amidst many purely personal matters—there germinate new ideas, which will eventually benefit the community. Irresponsible privacy, solitary habits, non-conformity and eccentricity are protected by Liberal society, because it sees in these the breeding ground of independent men: much needed for the public good.

The Consumers' Order

We have yet to supplement our picture of the competitive economic system of which only one half, that of the producers, has been discussed hitherto. The other half, formed by the consumers, is the dynamic system of distribution. Each consumer interacts with every other one who is buying in the same market, by influencing, through his purchases, the prices at which the others can buy. This tends to produce a dynamic order in which each consumer is receiving —so far as the prevailing distribution of income permits—maximum satisfaction from the available goods and services. Such satisfaction is of a private nature. Millions of people sitting at breakfast on one morning are not combined to any common action, but are merely being satisfied severally, as an aggregate.

Aggregate individual satisfactions belong to the sphere of private freedom, and lie outside the main subject of this essay—the conflict between totalitarianism and public freedom, of which the freedom of science is an instance. I will, therefore, not pursue here any further the dynamic order of consumers.

Machinery of Dynamic Order

The people engaged in the various dynamic systems of society, other than economic, are organised on more or less official lines in circles of special interest and professional bodies. Artistic, literary, musical, sporting, medical, technical, scientific, political, religious, legal, etc., circles cultivate one particular section of the social heritage and supervise its development. Their main functions are: to preserve and disseminate in approved form the past achievements and accepted principles of their special field; to stimulate new individual contributions and to judge their value: discussing, and either rejecting or accepting new additions to the body of the heritage under their care. The "influentials" in these circles act as referees for the publication of papers and books, for the exhibition of pictures, the production of plays and musical compositions, as advisers for endowments and appointments, as authoritative critics of work already made public; they can powerfully help or hinder the novice; they rule the internal life of the community of specialists of which they possess the confidence.

They rule according to law; assessing values according to the standards accepted and publicly acknowledged as the basis of all activity in their own field. Without such traditional standards no creative work and no dynamic order is possible. Mental creation means an act of thought, or of art, or of practical craftsmanship, that can be proved valid by some pre-existing standards. While every new creative effort changes somewhat the framework to which it is assimilated, every such modification is based on the continued persistence of some wider criteria of validity, in the light of which the minor change is being approved. Take science. New discoveries are frequently upsetting the scientific outlook of the day and modifying scientific standards, yet these discoveries are accepted by science—though sometimes after a lengthy period of discussion—in accordance with a wider scientific outlook and a wider aspect of scientific standards, which they are found to satisfy. It is the same in every art, in law and in all the other fields mentioned above. Each is governed by a permanent fundamental idea that cannot be expressed precisely, yet which comes into play every time the standards of the day are challenged. There have been many attempts to define these ideas: to formulate Scientific Truth, the Law of Nature, or the Canons of Beauty. But these attempts can lead to no definite result. Scientific Truth is an ideal: the ideal underlying the practice of science. It cannot be finally de-limited so long as science lives and continues to grow, opening up ever new unexpected realms of discovery. The same is true of the Law of Nature, which represents the ideals of Reason and Equity as practically manifested in the development of the various legal systems; so long as this development goes on, its underlying principle cannot be finally assessed. In Art again the only evidence of the ideal of perfection pursued is afforded by permanent artistic practice, as represented by the enduring masterpieces of all ages.

Ideals are adequately expressed only by the traditional practice which is conducted under their guidance. Their guardianship is the most important function of the autonomous circles of men cultivating the various dynamic systems : of science, law, art, etc.

Totalitarianism, hostile to all dynamic systems, attacks their standards and ideals. In the totalitarian view those who pursue ideals are neglecting their duty to society, for the sake of unsubstantial values of purely formal significance. The Marxist denial—quoted at the beginning under Point 1—of the justification of pure science, is a case in point. We will come back to it later in detail.

Another aspect of the same conflict arises from the democratic nature of the dynamic systems. Their growth takes place through the life and action of the community of specialists in charge. It is a democratic life conducted publicly, under the voluntarily accepted laws of this circle. We have seen how every new addition to the social heritage is suggested in public, discussed and codified, or rejected in public under the guidance of the "influentials" acting as elected officers. At the same time the specialist circles keep up popular contacts all around them. They appeal to a wider range of lay connoisseurs or specially interested members of the general public, and through these they recommend themselves to the common man throughout the entire community. Thus they establish the standing of their particular pursuits in the life of society as a whole. The inner circle of creative men becomes entrusted by the whole of society with the cultivation of certain ideals, in which the rest of the people take part at various stages of interest. We have here a system of indirect representation, at each stage of which people less experienced and interested in a particular field confide in others, more intimately concerned with it.

The expansion of modern public life during the 19th century, which has continued rapidly during the past two decades through the advent of the wireless and film, had made this informal mode of self- government, by direct response of the public to the activities of various specialised strata, a most important element of democracy. It has recently become a factor in politics, where it seems to be side-tracking to some extent the electoral machine. In the United States in particular, the division between the Legislative and the Executive has invited the development of this type of direct public influence—exercised through the press and the results of private polls which sway in major issues the views of the professional politicians—the electoral machinery retaining of course its function as the ultimate sanction of public opinion.

The existence of this modern form of democracy, upheld by the circles of dynamic systems and the general public connected with them, makes it necessary for modern dictators to become totalitarian.

No absolute ruler can be satisfied to-day with dominion over political life alone. That realm in itself is shadowy and insecure—as shown for example by the regime of South American dictators. Dictatorship can become real to-day only by eradicating the whole autonomous cultural life with all its widespread popular roots. Not before the prestige of the guardians of intellectual and moral order is broken, their autonomous circles are dispersed, and the wider public is reduced thereby to a helpless mass, can the dictator address the people directly, without fear of control or criticism.

Followers of totalitarianism often try to reassure themselves, and others, by promising that the central planning of science, and of other cultural and economic activities, would not be oppressive, since it would be based on democratic elections with a wide franchise. However, a régime which undertakes to destroy cultural life—as well as a system of production based on independent individual initiatives—by converting its members into the officials of a corporate organisation, does not become less oppressive by the fact that its chief is due for re-election at frequent intervals. Tyrannical functions do not become democratic, even though each single measure were referred to a plebiscite. Actually, of course, there could be no meaning in elections under a totalitarian régime, which controls all the news reaching its citizens and is responsible for planning all their public intellectual activities. Democracy cannot rely on elections, but must be based on the proper division of the social order between the corporate and dynamic forms of organisation.

Motivation in Stages

Social relations are impersonal. Writers have commented on this fact with regret in many particular instances, or complained in general terms about the soulless mechanism of society which effaces individuality and has no use for intimate mutual understanding. However, this is one of the prices that must be paid for the advantages of having a social machinery, which—like any other machinery—can operate only with material and with fuel that is more or less standardised, and can perform only such functions as are inherent in its construction.

The demands of the Law, its suppositions and interpretations must be definite and general. It must, therefore, assume a standard psychology, that of the Reasonable Man, who is expected to " take reasonable care ", " exercise reasonable foresight ", and is supposed " to intend the consequences of his actions ". The criterion of *animus* in criminal law is similarly limited to such crude psychological terms as " malice aforethought " and " accident ", or " justifiable self-defence ". The infinite variety of actually operative psychological factors are deliberately left out.[1]

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[1] The multiplicity of formal concepts for the same personality within a legal and political system has been critically mentioned by P. Valery, *La Politique de l'Esprit*, *Notre souverain bien*, Manchester University Press, 1941.

Nor can either employers or the public, for which a man works, take much interest in the personal traits and motives of those who serve them. They must standardise their requirements and contacts, to what is essential from their own point of view. Thus is formed the official aspect of the employee and of the independent individual in a public capacity ; it is defined by standard obligations and standard incentives or purposes, which are held to be proper for that occasion. The variety of individual motives, which prompt the desire to enter on these obligations, as well as on the attached incentives and entailed purposes, are again disregarded. They are respected as a person's private affairs, but have to be kept out of his official connections.

Another disparity inherent in the mechanical nature of social organisations is the divergence between the standard motive of the individual and the purpose of the whole, in which he participates. A subordinate working for a corporation has to be careful and disciplined in his duties, but beyond that the interests of the corporation which he serves are not his concern. His attention is properly due to the detail entrusted to him and to the exact intentions of his superior ; his legitimate incentive is to gain promotion by pleasing his superior. The corporation must be so organised and directed that an employee will advance its interests best by following this line of action. The position of the individual partaking in a dynamic system is similar. The problem before him comprises his entire responsibility. To the solution of his own problem, to the fulfilment of his own special task, he owes his entire devotion. The rules by which he has to be guided in doing so and by which he has to gain public approval for his achievements, must be such as to safeguard the advancement of the dynamic order, whenever individual actions are taken in compliance with them.

The official character of the employee or public official, as distinct from his private person, and the limitations set upon his intentions by discipline, are usually known well enough. But the official character of the person acting independently, of the public individual partaking in a dynamic system, is not commonly recognised as clearly.

Economic science has analysed the situation with respect to a system of competitive production. The standard incentives of the individual producer have been defined, and his normal obligations considered, as distinct from his private motives inducing him to pursue those incentives and to accept those obligations. It is also clear that he has no responsibility for the advancement of national or planetary prosperity in general, which is the purpose of the system, taken as a whole, in which he participates. He may try to reform business life, both as a pioneer at his own works or as a voter or writer, etc. He may give all his earnings to charities or to the Communist Party ; but he cannot carry on in business unless he keeps—while at his job—to the pursuit of profits for his firm.

The double distinction between private motives and standard motives, and between these and general purpose, is evident in judicial procedure. A man coming forth to give evidence may be prompted by a variety of motives; a barrister may take up a case for the love of money or to please his vanity, or for political reasons, or from compassion; a judge may be guided in his career by ambition, love of juridical scholarship. etc. But once counsel has been briefed, the judge has taken the chair, witness has been sworn in, each of them falls into the pattern of his official motives. To these they must restrict themselves: keeping out not only their private inclinations, but also any attempt to aim directly at the higher purpose in which they are participating. Witness must stick to facts and must not plead; counsel must argue his case and not assume a judicial attitude; the judge must apply the law, even though he should desire to amend it.

In science the irrelevance, for the result achieved, of the private motives leading to the pursuit of research, is neatly illustrated by comparing the persons who in different places make the same discovery at the same time. The principle of Conservation of Energy was discovered independently by a half crazy South German doctor (J. R. Mayer), a reputable beer brewer in Manchester (Joule) and a young Prussian Junker (H. von Helmholtz). The three living co-discoverers of Quantum mechanics (an Austrian, a Prussian and an Englishman) make, personally, an equally ill-assorted triplet. When men, so different, do the same thing at the same time, they are not following their private motives, but standard incentives, which their private inclinations have led them to accept.

The standard motive of a scientist at his work is to make discoveries that are important in science—as important as possible. He also desires to see these discoveries accepted by science and credited to himself. Unless he has a special gift and passion for discovery, this standard motive will not appeal to him, nor would it be of any use if it did. But unless he accepts this motive he will not become a scientist—whatever his intellectual powers and passions may be.

Scientists at work are specialists, unconcerned with the advancement of science as a whole. When they want to promote science as a whole, they must leave their work and attend committees, or make speeches and write memoranda. This is necessary, and is usually undertaken by senior "influentials" who have given up active research. It is significant that the main difficulty in the advancement of science as a whole by the defence of its ideals—to-day—lies in the fact that most scientists will not take any interest in the cause of science, for fear of disturbing their work.

Ideals in Society

We have outlined the machinery of the dynamic systems which constitute the intellectual and moral order of society, and have analysed the motives at work in them. We have pointed out the connections of such systems, through successive levels of indirect representation, with the general public. These are instrumental in conveying not only the response and moral support of society, but also in providing financial resources, as well as recruits to the various groups of active specialists. These public relations are carefully cultivated by the inner circles and bodies of each system, headed by its "influentials". Each pursuit rivals with the others in attempts to gain the right sort of general publicity and to exercise its influences on education. They are also rivals for public funds, which they need for the endowment of the teaching, the practice and the exploration of their various fields. Society divides its attention, its funds and its recruits between them; it gives them support and accepts their guidance.

Society will be prompted by a variety of different motives when it contemplates giving support to any dynamic system of the intellectual or moral spheres. But once it has decided to lend its support to such a system, its intentions can be seen to be all transformed into an allegiance to the ideals by which the system itself is guided.

Take science. The hopes attached to its progress are most varied. Man's desire to know and understand more, just for the sake of enlightenment, plays a part. But there is even in this part a divergence between a religious view which seeks, through science, the verification of God's wisdom, and an opposite outlook which supports science for the sake of discomfiting church and religion. In modern times the spreading of science to new countries usually begins with the endowment of medical research, which even in highly developed countries seems to appeal to the widest public. On the other hand, the progress of industrialisation leads to an accentuated support of the exact sciences by a small but influential circle. Both types of this class of supporters hope to gain useful knowledge from the progress of science: to be applied to the healing of disease and other technical problems. After the Peace of 1919 many new countries, like Czechoslovakia, Hungary, Turkey, gave support to science in order to promote national ambition, and some international scientific organisations were at that time vigorously subsidised in France for the purposes of French national supremacy. The Soviet Government, and for some time also the Fascist Government of Italy, were lavish in entertaining international scientific meetings on their soil with a view to strengthening their prestige abroad.

The fact that in our times all public funds allotted to science are given to local or national institutions, instead of being spent evenly over the planet, wherever people are prepared to pursue research (which would be their most economical use from the point of view of science), clearly shows that as yet no existing community is prepared to support science exclusively for its own sake, but only in so far as it is maintained within the limits of the community and contributes to its life. Obviously public authorities acting in this fashion would rather produce a science which was entirely their own: which would either show that only the spirit of their own country could produce good science, or would be of such a kind that it would be of no use to anyone outside the country of its origin. Some Governments have tried it; revolutionary and warlike Governments particularly have tried it hard. During the past 25 years many violent events have helped these Governments to seclude their own scientists from others, and to press on them forcibly the claims of their own country and régime. Science during this time has progressed considerably. Yet when we look at a modern textbook of physics, chemistry, astronomy, mathematics, etc., there are no divisions according to the places from which the various contributions originate. The divisions are entirely systematic, following the logical structure of the subject; and each section and sub-section forms a mosaic of closely related pieces of evidence the authors of which are dispersed between various warring nations, New Civilisations, New Orders etc. There is not even a seam to show for the efforts of all the great powers which have laboured to tear up the unity of science.

Governments, whether peaceful, warlike, democratic or revolutionary, had to be satisfied to support international science because there is no other. They had to subsidise a great deal of science, which—so far as any rational human foresight goes—will never be of definite use to anyone, because that is the only way science grows. They had to give allegiance to the ideal of science for its own sake, because the alternative is to have no science at all. Much as a cow may be kept in order to yield its milk, its flesh, its hide, its dung, its bones, or may be maintained as a sacred animal; but in any case must be born from a cow, and left to live and grow up into a cow, in its own interest, as a cow—otherwise it will yield none of the expected benefits, either practical or sacred.

The confusing feature about autonomous systems in society is that here the cow of our picture is part of society itself, living for a purpose of its own in the midst of the community which supports it. Those inside and outside this part of society are the same kind of people, responding fundamentally to the same intellectual and moral stimuli. The immense popular success of an exhibition like that of the Palais de la Découverte in Paris (1937), which was devoted almost entirely to pure science; the universal fame which Albert Einstein gained in the 1920-ies through the discovery of a new scientific interpretation of space and time; the popularity of N. Bohr in Denmark and that of Rutherford in Britain; all sufficiently illustrate the wide recognition of science among the people. The ideals cultivated by special circles in society are acknowledged as real by the common man, even though his own aims in life lie in a different direction Believing these ideals to be real and living, and their guidance essential to society, he approves of their continued cultivation, hoping thereby to maintain a steady increase of human and material values in society.

This hope of progress through the pursuit of various forms and aspects of truth—artistic, scientific, religious, legal, etc.—by a number of autonomous circles, each devoted to one of them, is the essential idea of a Liberal Society, as contrasted to a Totalitarian State. It reveals the full scope of the ideal of freedom. The Liberal conception is that freedom is the only method by which we can continue to discover the regions of yet undisclosed truth into which we are advancing. Truth is so complex, and each particle of it hangs together directly with so many others, that it can be revealed only by a continuous series of independent individual initiatives On the other hand, there are so many kinds of truth, corresponding to the wealth of different faculties possessed by man, and the variety of interlacing patterns that can be found in the world, that the explorers must split up into a number of detached parties, each following the guidance of a single ideal which leads to one aspect of truth out of many. Only thus can the growth of the whole vast web of better understanding be advanced, which in its entirety is far beyond human perception, but on which, nevertheless, Liberal Society confidently bases its future.

The Social Milieu

I have tried to make it clear earlier that while it is impossible to transfer the task of ordering, achieved by a dynamic system, to any single planning authority (and that nothing but chaos can be the result of such an attempt), a dynamic system can be modified to a certain extent by variations—in kind and intensity—of indiscriminately applied influences. These may operate either through a change of the " internal forces " by which the individual elements interact, or as general forces and limitations from outside. In a sense we have already seen that this applies to dynamic systems in society, when we observed that their standards must be guarded and the opportunities for their cultivation maintained and protected ; that they must receive the support of society : in recruits, finance and confidence. It is also fairly obvious that the prosperity of these autonomous systems embedded in society, and living on it, must largely depend on that of the general surrounding milieu, and will often advance, or decay, with the rest of the community ; further, that they will take notice of subjects arising in other parts of society, make use of new techniques developed there for other purposes, and generally experience humanity at large as the most interesting part of the surrounding world.

However, this will cause no fundamental change in the internal structure of the dynamic systems of society, nor alter the ideals which they are serving. In fact there are dynamic systems in society which largely depend for their growth on changes in social circumstances.

Thus the Common Law has been authoritatively defined as " a system which consists in applying to new combinations of circumstances those rules which we derive from legal principles and judicial precedent ".[1] The persistence of legal structure throughout changing circumstances is well illustrated by the establishment of the Common Law—with variations in detail—in British India and other populous British native dependencies ; and perhaps even more strikingly by the adoption of the *Code Napoléon* as a model for their new civil legislation, by numerous independent Asiatic, African and South American nations, which modernised themselves during the 19th century. Japan, Siam, Turkey, Egypt and the new Spanish and Portuguese States of South America all followed this line.

Naturally, this has also an application to science. New facts which turn up in society, be it by wars of conquest or by business expansion or the progress of technical inventions, may supply most interesting new data for scientific study and may suggest innovations in the experimental technique of science. Besides, scientists at work share the interests of other people to the extent that they find added attraction in an investigation if it deals with things of general human or practical importance. However, whatever new materials science feeds on, it will always continue to absorb them for its own purposes. There is no evidence that these purposes have undergone any important modification ever since the methods of modern science started operating about 300 years ago. Our scales of scientific values have not noticeably changed during this period ; no parts of science have lost their validity on account of a change in scientific standards. What was accepted as true by scientists 300 years ago would still be accepted as true by us to-day on the evidence available at that time ; and there is no reason to believe that the reverse would not hold. In the last 25 years, in particular, the planetary unity of science has been maintained (almost without a conscious effort), even though the greatest contrasts have developed in various countries and in spite of energetic attempts of certain Governments to disrupt that unity.

THE ATTACK ON SCIENTIFIC IDEALS

We return to the analysis of the movement of thought in Britain to which our opening paragraphs referred. The war on pure science waged by this movement has now been placed in a wider context. It arose under the influence of Marxist philosophy and, though many of its followers are sincere believers in freedom, its politically most active personalities profess the doctrines of the Communist International. Our previous analysis shows that only the position of the latter—not that of the former—is consistent with the rejection of the ideal of pure science. The arguments that are mainly used to sustain this denial confuse science with other things that science is *not:* thus distorting the perception for what science *is* in reality. The various connections of science with society, the motives for which science is undertaken, the materials which feed it, as well as the effects—good and bad—which result from it, are dazzlingly illuminated, while the life of science itself is left in the dark. Since few people know science intimately, while many know its surroundings, it is not difficult to suppress by this method all general belief in the life of science.

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[1] Lord Wensleydale, quoted by Professor J. H. Morgan in *Enc. Britannica*, 14th Edn. Art. Common Law.

The doctrine formulated at the opening of this essay as Point 1 of the Marxian view, that science cannot be distinguished from scientific technology,[1] is leading the way in the attack on scientific ideals. Yet the distinction, so commonly denied to-day, is fairly obvious. Technology is knowledge of the way to produce practical advantages by the use of material resources. There is a limit to the urgency of any particular practical advantage and a limit to the abundance of any practical resources. No process of technology can remain useful in face of a drastic reduction of the urgency of the "advantage" gained and/or of the abundance of the "resources" used up by its application. All processes of technology can thus be invalidated by the occurrence of such changes in the relative urgencies of needs and in the relative abundances of materials, which would cause the process—if applied—to produce things that are *less* valuable, from things that are *more* valuable. An invention producing practical *disadvantages* would scarcely retain that name.

Science, on the other hand, cannot be affected in its validity by variations of abundance of things or urgency of needs. Its interest may thereby be altered slightly, but not one particle of science will be invalidated; nothing will become untrue that was true before—nor the reverse.

Another way to discredit the self-purposive standing of science is to connect the private motives and circumstances of scientists with the nature of their contributions to science. This is a line much favoured by Mr. Crowther in the *Social Relations of Science.* He is greatly concerned with people's incomes. We learn that often people are too poor to be concerned with science, and that in other cases they are too rich to trouble about it. Plato, for example, was rich and despised science,[2] and ever since rich people tend to follow him.[3] Of course very often it is on the contrary great wealth that promotes scientific interest, just as the right sort of poverty may do it.[4]

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[1] I prefer here the term "scientific technology" to that of "applied science", so as to exclude for the moment the problems offered by practical branches, like medicine, education, economics, where scientific principles are applied directly to man or human society.

[2] *S.R.S.*, pp. 66–67.

[3] *S.R.S.*, p. 125, Platonism the carrier of anti-scientific snobbery in Roman times; p. 279, it becomes the philosophy of the ruling bankers of the Renaissance; p. 578, it is the first sketch of the philosophy of modern Fascism.

[4] *S.R.S.*, p. 116, the Romans were too rich to advance science; p. 160, so were the Moslems; p. 592, the French people after 1918 were also too rich; p. 552, Russian Academy before the Soviet Revolution misguided by wealth. On the other hand (p. 208), great wealth was helpful to Roger Bacon's scientific work; and also (p. 358) to Guericke's: and (p. 369) to Boyle's,

Such considerations are misleading, unless taken in a sense in which they are obvious and irrelevant. Whether a person can and will become a scientist or not clearly depends to some extent on his income and private circumstances. But once he has become a scientist, his results do not depend on his personal circumstances. I have quoted some of the evidence on this point in the chapter on motivation, and could go on filling pages with similar cases. Only one shall be added here because it will particularly appeal to Marxists. The greatest advance in physics made in Russia during the past 25 years was the observation in 1928 of a new form of optical scattering by the Soviet physicist Landsberg. The same discovery was made a few weeks earlier by C. V. Raman, a native and inhabitant of British India, who, in view of his priority, received the Nobel prize for this piece of work. He had, however, to share some of the credit with the Viennese physicist—now an ardent Nazi—A. Smekal, who predicted the effect some years earlier. It is difficult to find three privately and socially more divergent people than Landsberg, Raman and Smekal, yet their work in science is essentially identical.

Science is again submerged with extraneous matters when the practical interest of society is emphasised to the point at which it appears that science itself is guided by that interest. The obvious fact that—with the exception of very few cases—none can tell at the time of a discovery what its future practical applications will be; and that these applications are known least of all to the discoverer, whose knowledge of technology is mostly slight, is overcome by a mystical construction, that social needs compel discoveries which scientists believe follow from the internal logic of scientific development; so that scientists are unconsciously following a practical purpose of which they themselves are unaware. Mr. Crowther explains for example, the direction taken by Clerk Maxwell when embarking (around 1855) on his studies of the theory of gases and of the electric field, as follows:

> "Mercantilism had surrendered the initiative to industrialism, and navigation gave place to the steam engine and the telegraph. In parallel with this social movement, mathematical astronomy gave place to heat and electricity. . . . Maxwell's reform appeared to him mainly as a transfer of attention to those parts of science that seemed most promising of important discovery. He did not enquire why heat and electricity appeared to him more promising than astronomy. It was sufficient that he knew that they were so. History has entirely confirmed Maxwell's opinion, though he regarded it as self-evident. It is possible now to see that he was an intellectual instrument of a development determined by the main social forces of his time, while his choice of studies appeared

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and—in general—the status of a gentleman of leisure was the economic condition for scientific excellence throughout the Middle Ages (p. 239) and in 16th and 17th Century England (p. 384). On the other hand, medieval Society was too poor for the advancement of science (p. 222), while the Roman slaves were just prosperous enough for its pursuit (p. 113).

to himself to be determined by the logic of their own development."[1]

Mr. Crowther's theory of Maxwell's position in the midst of the industrial interests surrounding him is up to a point analogous to the well-known type of demagogical construction: "The Jews desire Hitler's fall; Churchill fights Hitler; hence Churchill is the tool of the Jews." The difference is only that Mr. Crowther's construction contains one more element of magical reasoning. In his argument there is no question of the tool (Maxwell) being actually intent on promoting the interests in question; it is admitted that he was not aware of future practical applications of his work. Thus Maxwell becomes an *unconscious* tool of interests, to which he was admittedly indifferent, in the pursuit of future results, of which he was admittedly ignorant.

Such constructions gain strength in the eyes of their believers from the very fact of their absurdity. Absence of tangible reality is taken to prove the presence of a profound, hidden principle of "social determinism".

A common manifestation of the same fallacious intellectual instinct, which Mr. Crowther utilises in this argument, appears in the irresistible habit of the beginner—so often reproved in the schools—to "write history backwards". The novice keeps reconstructing the minds of people at an earlier period of time as if they could have known the events which followed in a later period. It requires a trained effort of the imagination to avoid infusing the minds of historical people with a fore-knowledge of their own future, which is forming an integral part of our present conception of them.

The writing of history backwards is a standard method for proving the magic powers of social needs in directing the discoveries of scientists. Professor Hogben applies it as follows to the case of Maxwell:

> ". . . In Maxwell's treatise the Newtonian mathematics of the older universities was linked to the experimental measurements made by Faraday and Henry in extra-mural foundations, such as the Royal and Smithsonian Institutions. As with the form, so it was with the substance. From the beginnings of practical telegraphy the possibility of propagating electrical phenomena through space without the aid of conducting material in the ordinary sense continually prompted speculation and experiment. In the adventurous hopefulness of nineteenth century industrialism, telegraphy without wires was the philosopher's stone and the elixir of youth. Thus far, telegraphic communication was the most spectacular achievement of science. As such it received its full share of recognition in the Great Exhibition which coincided with the Atlantic Cable venture. Two years later—in 1853—Dering, an inventor whose electrical appliances received an honourable

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[1] *S.R.S.*, p. 453.

place among the exhibits, referred to ' the craving there is at present for wireless telegraphs '. This was the year in which Maxwell became second wrangler."[1]

Fantastic exaggerations (" philosopher's stone," " elixir of youth,") referring to a problem which it would be more correct to describe as an obscure one at the time in question,[2] together with other colourful stage settings, thus endow the method of writing history backwards with irresistible power ; in particular when the subject is one known to few, and the writings are addressed to the general public in combination with a political message which they convey.

To make the position, thus established, impregnable, it is only necessary to keep it sufficiently obscure. Strictly speaking *no definite statement whatever* has been made above by Professor Hogben about the reasons that led Maxwell to develop the theory of electromagnetic waves, which about half a century later contributed to the invention of wireless telegraphy. At least none that would go beyond the commonly held and rather irrelevant opinion, that the study of electricity in the 19th century gained added interest from its wide practical applications. Yet the force of indirect suggestion in Professor Hogben's quoted passage is so strong that he can use it to prove his attack—made on the page before—on the view generally accepted in previous literature, that Maxwell " laboured for knowledge alone " and was justified in doing so. This—we are told by Professor Hogben—is nothing but an " arrogant pretence " of scientists.

The remarkable fact that this new theory of science is always demonstrated by examples of a comparatively remote past, *in the midst of our century possessing unparalleled scientific achievements of its own*, can be understood from the above analysis. The practical applications of recent discoveries are not yet known, so that in their case history cannot yet be written backwards. What technical inventions were the discoveries of the Nobel Laureates Planck, Einstein, Perrin, Millikan, Michelson, Rutherford, Aston, Chadwick, Barkla, Heisenberg, Compton, Franck, G. Hertz, Rubens, Laue, Joliot, Fermi, Urey, Anderson, W. H. and W. L. Bragg, Schrödinger, Dirac, etc., unconsciously intended to produce ? No one can tell—so the new theory of science must pass them over.

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[1] *Science for the Citizen*, p. 737.

[2] The urgent need of wireless transmission arose, according to Professor Hogben, from a burning desire to save the cost of telegraphic cables. The actual state of affairs can be assessed as follows. Owing to various technical difficulties, wireless transmission has never superseded cable telegraphy. On the land the use of cable remains uncontested and the competition between wireless and cable for overseas telegraphy is yet undecided. This fact, far from moving all scientific speculations of our time, remains unmentioned even by the author of *Science for the Citizen*, who takes such particular interest in the problem.

The real importance of wireless transmission (apart from its more recent application to broadcasting) has obviously been in the field of navigation—the supposed loss of interest in which is thought (by Mr. Crowther) to have turned Maxwell's mind from astronomy to electric waves. Actually, to-day, this country depends for its very life on navigation ; and this dependence arose precisely in the decades after the repeal of the Corn Laws : in Maxwell's time. Thus a flippant critic might suggest that the theory of social determinism has proved right after all—only that Maxwell's response was not to the decline, but rather to the sudden increase in the national significance of navigation.

One wonders how the great physicists in the list above would have fared if, before embarking on their investigations, they had had to get a certificate of its social usefulness from a scientific directorate, as contemplated by Marxist scientists and their friends. To what conflicts may not have led their " arrogant pretence " to be sole judges of their own preference!

The Totalitarian Position

However, this argument in a sense lacks reality. Points 1 and 2 of the Marxian position stated at the opening of this essay—the negation of pure science and the demand for the control of research by society—have not been put forward by their protagonists as isolated doctrines, nor can they be met on such grounds. The attack on science is a secondary battlefield in a war against all human ideals, and the attack on the freedom of science is only an incident in the totalitarian assault on all freedom in society. This attack is entailed in Point 3, demanding unconditional support of scientists for the rise and continued rule of the right kind of political power.

It is hardly possible to argue with this doctrine. It calls for unlimited violence in order to achieve the establishment of desired changes in the social structure and rejects all obligations to truth or humanity which might obstruct its own set purpose. But we may use the foregoing analysis to draw up a brief outline of the totalitarian position in its entirety: so as to reveal the full strength of its formidable logic and bring into view the decisive points at which its advance must be met.

Liberal society, by maintaining various systems of dynamic order, entrusts its fate largely to forces beyond its control. Its productive system grows in unpredictable directions; and by the cultivation of the ideals to which it gives allegiance, society lets itself be guided towards new stages of enlightenment, whose implications are largely unknown. The faith that society may confide itself to a variety of principles, which guide systems of co-operation by individual adjustment, is the faith of Liberalism, on which—as I have tried to show—the entire structure of the Liberal Society depends. From the opposite position one arrives, by following the same analysis backwards, to all the basic principles of the Totalitarian State.

Suppose society decides to abandon the pursuit of largely uncertain ends and to take its fate wholly into its own hands, directing its course entirely towards definite and specific immediate aims: then the structure of society must be changed accordingly. The application of the whole community to the achievement of a definite immediate aim—like winning the war, or dealing with flood, famine, epidemics, or any other emergency—must be entrusted to a State with powers to use every citizen for that definite aim, in accordance with a central scheme, or plan, formed at headquarters. No respect for law, or even humanity or truth, must interfere with the immediate good of society which is thus defined and entrusted to the State. No individual has any justification to act independently under a State which alone knows the whole plans for the future welfare of the community. There may still remain residues of private life and private freedom; but all independent individual action for the public good, all public liberty as Liberals define it, must go. A State which is wholly responsible for the collective welfare and progress of its citizens must be dictatorial.

Powerful emotional forces are set into motion when general aspirations are replaced by specific aims. The wide hopes of men, withdrawn from where they dwelt in many dimly perceived expectations, are now focused entirely on the single concrete task set by the State. Such faith is narrowed down to the point of idolatry and intensified to the pitch of fanaticism. It produces a curious type of fanaticism, deriving its strength from the destruction of all ideals. A fanaticism, bitterly hostile to all ideals; combining fanatic passion—in an entirely novel way—with hard-headed, biting cynicism.

It is a vast undertaking to convert a social body, where the citizens are participating in the wide horizontal network of dynamic order, into a corporation in which every man is a subordinate depending vertically on the State. In Germany this process has gone on for years, and even to-day there seem to remain numerous circles retaining vestiges of their previous independent cohesion.

The transformation has been described by Rauschning as the endless Revolution of Nihilism. Wherever citizens meet, or communicate with one another, to cultivate any aims that are not set to them by the State, the network of communications must be destroyed; and its destruction must be made secure by placing each individual directly under authority from above. All jointly upheld rules and standards, and the authority of eminent individual experts, must be ground to dust so that no shelter should be left standing, for use against the decrees from the centre. Any influence that the circles hitherto cultivating special ideals may possess over the general public, and all access they may have to the public ear, must be eliminated: so that the official voice alone shall be heard. Any motive that goes beyond the fulfilment of directions from above can be tolerated only as a residue of private life and must be branded as unsocial or disloyal if it should attempt to pursue aims of any wider significance. There must be left no more independent witnesses, or judges, or scientists, or preachers, or painters, musicians, playwrights, journalists, historians, economists, or even doctors, lawyers or clergymen; no independence of unions, professional associations, congregations or even sports clubs can be tolerated; the validity of all laws, of science, of the arts, of religion must be suspended and their substance declared subject to summary revision by the State.

This process of vertical integration under Party Rule is nothing but the sober logical consequence of the replacement of social ideals by immediate specific social purposes. But the destruction to be undertaken in its execution is so vast, and the lingering feelings of respect for the intellectual and moral treasures hitherto cultivated, as well as for the men who would defend them, is still so strong that only disciples steeped in fanaticism will be able to suppress their own scruples and wield the weapon of terror with sufficient effect. The party members educated in unscrupulous fanaticism is an indispensable factor in the making and maintenance of the Totalitarian State.

The promotion of the totalitarian doctrine thus involves three phases which can be traced, for example, through Mr. Crowther's book.

Firstly the debasement of the most cherished ideals of our civilisation. Respect for Christian devotion may be debunked, for example, as follows: "The Franciscans . . . were the obverse of the new bourgeoisie. By pledging themselves to poverty they atoned for the bourgeoisie's lust for gain, and became its conscience. In return, the bourgeoisie kept and favoured them."[1] Thought and art even at its highest peaks can be exposed in a similar fashion. The Renaissance may be described as "in effect a manœuvre by the triumphant bankers and merchants to fortify their new ruling positions by cultural defences".[2]

Secondly, the transfer of devotion from ideals to specific aims. People must be made to feel that to pursue pure truth is "a little cold, mean and selfish" as compared with direct service to the community. Gradually all ideals are replaced by a single determination directed towards immediate social action.

Thirdly, the establishment and justification of the new ground entailed by this position. We are told: "On the one side there is private ownership, spiritual vulgarity and some independence; on the other side there is communal ownership, moral dignity and police supervision."[3] And thus eventually the mind will be opened to the final thesis, that the methods of the Spanish Inquisition are the rational instruments of human progress.

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[1] *S.R.S.*, p. 188.
[2] *S.R.S.*, p. 248.
[3] *S.R.S.*, p. xxvii.

Book Reviews

Cambridge Economic History of Europe from the Decline of the Roman Empire. Edited by J. H. CLAPHAM and the late EILEEN POWER. Volume I. "Agrarian Life of the Middle Ages." Cambridge University Press. 1941. xvii + 650 pp. 30s.

In some ways the new Cambridge economic history seems likely to be the most important of the widely-ranging historical series edited by Cambridge scholars. One reason is its method and its suggestiveness. The volume shows what immense advances have been made by economic history during the last twenty years; how regional studies have led to the formation of comprehensive views that revise our preconceived notions of European history on the political as well as the social and economic side, yet always with a caution and reserve based upon the incompleteness and tentativeness of the data. In a striking sentence Professor Marc Bloch analyses the method: "Perhaps, after all, one may interest the reader best by describing to him how one groped for truth in the laboratory." The impression left by our scientists' researches may be partial, even desultory, the gaps in the story frequent; but the conviction of a living and vital science is always there. It is this quality of life through perpetual discovery that the editors have imparted to their volume. One of them is no more. These pages (planned by her, as Dr. Clapham explains) stand as a memorial to the range and lucidity of her vision. *Nihil quod tetigit non vivificavit.*

In this work of true European scholarship the general and the particular are blended to produce a picture of the agrarian life of Europe from the late days of the Roman Empire to the Middle Ages in decline. Some historians tend to conceive of the medieval period as a time of highly developed feudal institutions: yet how long the seigniorial groups were in coming to maturity, how many forms they took and at what divers times they reached that state, is the lesson of the early chapters, of which the most important are, to my mind, Dr. Richard Koebner's survey of the barbarian settlement and Professor Bloch's section on the rise of dependent tenure and seigniorial institutions. Dr. Koebner's part, with its astonishing range of knowledge, bridges the gap from Roman to Frankish times by tracing, in the Romanized areas, the migration of the landowners from the town to the country, and, in Roman and non-Roman territories alike, the development of the early medieval peasantry, whether tenants in service on some lord's estate, or small freemen, members of a village community settled on the village fields. He does justice to the colonising and pioneer work necessary in the creation of a settled agrarian life (especially notable in his treatment of clearing and assarts), and to the extension of cultivation to land that seemed scarcely capable of it. Cultivation, and the methods of arming, are the topics treated by Mr. Stevens and Professor Parain, with due regard to climatic and geographical features. And then, in a very significant discussion, Professor Dopsch deals in greater detail than Dr. Koebner with the institutions of the Germanic settlement. Here the well-known standpoint of the continuity between imperial and medieval settlement is to be found, differing from that of Dr. Koebner, who maintains that the incoming invaders always chose new sites for their dwellings. The chapter of Professor Ostrogorsky on the agrarian conditions of the Byzantine Empire serves not only its primary purpose, but also to show, through its insistence on the rapacity of the large landowner in the Byzantine Empire, why that Empire after the Macedonian Dynasty grew weak from within.

But it will be Professor Bloch's discussion of the *manse* system and his suggestive treatment of the evidence showing that both servile and free *manses* could coexist in the Carolingian age, from which the impression of the slow cumulative growth of seigniorial institutions will best be gained :

> " Thus behind the classic *seigneurie* our enquiry reveals long and obscure beginnings. A very ancient structure of rural chiefdoms was the essential nucleus and about it the centuries deposited their successive layers one by one. Then the economic conditions of the early Roman era created the great demesnes facing the family holdings of dependants. The conditions of the late Roman era and of the early Middle Ages led to the coexistence, and subsequently the fusion, of *manses* cultivated by ' free ' tenants with the new servile holdings, and, above all, linked the demesne to the holdings of whatever type, by heavy bonds of service. Finally, the institutions of the feudal age gave the *seigneurie*, always aggressive, its finishing touches as a disciplined group whose members were harshly exploited. And yet the rural community had always retained a great measure of collective action under its chiefs. To the system thus slowly built up by one deposit after another Western Central Europe owed some of the most significant aspects of its civilisation, especially during the Middle Ages."

Into these few lines Professor Bloch has put the result of a cautious and highly compressed argument which throws much light on social phenomena capable of economic explanation. Thus, for example, he shows that slavery came to fade out in Europe because it simply did not pay. The very existence, even under the later Roman Empire, of the *casati*, the " hutted " slaves, is sufficient to prove that the slave gang was no substitute for a settled population of dependants.

In the second part of the book, the specific regions of Europe are surveyed and at the end there is a summary of the position of agrarian life brought about by the penetration of money economy. Among the individual studies one may note especially Dr. Aubin's account of the effects of German colonisation on Slavonic society, Professor Ganshof's description of manorial organisation in Western Europe north of the Alps, and Miss Neilson's section on England. All these deal with the fully developed agrarian unity in customary areas, where tenure was not dependent on written contract (the *livello* of Italy) and where domanial organisation might take very varied forms. In the European countries the development of a system of leases in the 12th century, due to the desire of the lord to share in the increased productivity of the soil, led ultimately to a transformation of the manorial economy and on the whole to a greater assertion of independence in the tenant populations, while the legal framework remained the same. This does not apply universally throughout Europe, as Dr. Aubin's chapter makes clear, but in England it was to prove an influence of the greatest importance. It is right, therefore, that Dr. Nabholz should lay the stress he does upon the economic development of England in the 14th century, though he shows that the increasingly prevalent money economy created less disturbance here than on the Continent, owing to the possibilities offered by the marketing of grain in neighbouring towns. Perhaps he does not give quite full enough consideration to the influence of the lease system upon our later medieval society: he is more at home in Germany, where the great demesnes had already begun to disintegrate before the advent of a money economy.

No summary account of the book can do justice to the detail of individual chapters or to the subtle interweaving of constitutional and legal with purely economic data which opens new approaches to the study of early society. If the economic interpretation of history is to be justified at all, it is only when, as in this book, so much in the life of society has contributed to the explanation of the epithet.

E. F. JACOB.

Karl Marx in His Earlier Writings. By H. P. ADAMS. George Allen & Unwin. 1940. 221 pp. 7s. 6d.

Marx' philosophische Entwicklung, sein Verhältnis zu Hegel. By KONRAD BEKKER. Zürich, Oprecht & Helbling. 1940. 134 pp.

Heaven Wasn't His Destination. The Philosophy of Ludwig Feuerbach. By WILLIAM B. CHAMBERLAIN. George Allen & Unwin. 1941. 216 pp. 8s. 6d.

The first two books to be noticed here, although devoted to essentially the same subject, are as unlike each other as possible.

That the early stages of Karl Marx' intellectual development should at this time become the subject of close study is very natural. A great amount of material that is entirely new or was formerly difficult to obtain has been made available by the publication of at least the relevant parts of the *Historisch-Kritische Gesamtausgabe* of the works of Marx and Engels, and several of the works have recently been made available in English. The new and completer picture of Marx' evolution which emerges is admirably and lucidly presented by Mr. Adams. Although clearly based upon careful and exhaustive study of the sources, it presents an unpretentious and straightforward account that reads well and leads by gradual stages to a fairly full picture of Marx' views just before the composition of the *Communist Manifesto*. The careful and reliable summary of the argument of the *Holy Family* and the *German Ideology* will be particularly welcome.

Mr. Bekker's German, or rather Swiss, thesis on the same subject does not pretend to make Marx easier. While unquestionably thorough and probably profound, it is a book of which the reviewer has to confess that he is by no means certain that he has understood it. There is some acute and illuminating comment on particular points of the relations between Marx and Hegel, and the extensive references to parallel passages should prove very helpful to future students of the same problems. But I doubt whether anybody but the specialist will derive much profit from it.

It may be doubted whether there was any need for an English book on Ludwig Feuerbach, and there was certainly no justification for an attempt to popularise him. Yet this is exactly what Mr. Chamberlain attempts in the third book listed above, whose title gives a fairly good indication of its character. It can hardly be said to be even an adequate summary of the excellent German and French studies which are available on Feuerbach, and it certainly does not contribute anything new to his understanding. Occasional and not very successful attempts to liven up a rather dull account by emulating modern journalistic technique help to this end as little as the bad translations of certain scraps of German poetry which the author has decided to include.

F. A. v. Hayek.

Livestock Marketing. By A. A. Dowell and Knute Bjorka. McGraw-Hill Publishing Co. 1941. 523 pp. $4.

This work represents the results of vast industry devoted to the compilation of a mass of detailed facts. These facts are presented in systematic order, illustrated by maps and diagrams, and there are chapter summaries which simplify what would otherwise be the reader's difficult task of picking out the essential features and trends of livestock marketing in the U.S.A. Unfortunately—although it is addressed not only to students in agricultural colleges, but also to "graduate students interested in more advanced work in the field of marketing"—it hardly goes beyond the sphere of mere description. In Chapter I, it is true, the authors distinguish certain important problems—such as the relative merits of direct and indirect marketing, and the relative efficiency of co-operative and individualistic methods of marketing—but the subsequent discussions of these and allied subjects do not lead to any clear conclusions and the material collected is not presented in a form which enables the reader to draw his own conclusions. In fact, it can be said that nothing worthy of the name of economic analysis, or of the application of economic principles to practical questions, is attempted. There is, for instance, nothing comparable with Messrs. Coase and Fowler's analysis of the "pig cycle" (ECONOMICA, May, 1935). The same criticism applies to the treatment of various technical subjects, such as refrigeration. Again, little or no light is thrown on fundamental issues, such as the effects of changes in marketing methods on the position and earnings of farmers, or on the dietetic value of the meat supplied to consumers. In short, one cannot help feeling that the purely descriptive (including the historical) material might, with advantage, have been summarised in one-half or even one-quarter of the space, leaving room for more adequate treatment of the fundamental problems involved and of possible solutions. As it is, the only problem for which an adequate solution is provided is that of insomnia!

VERA ANSTEY.

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